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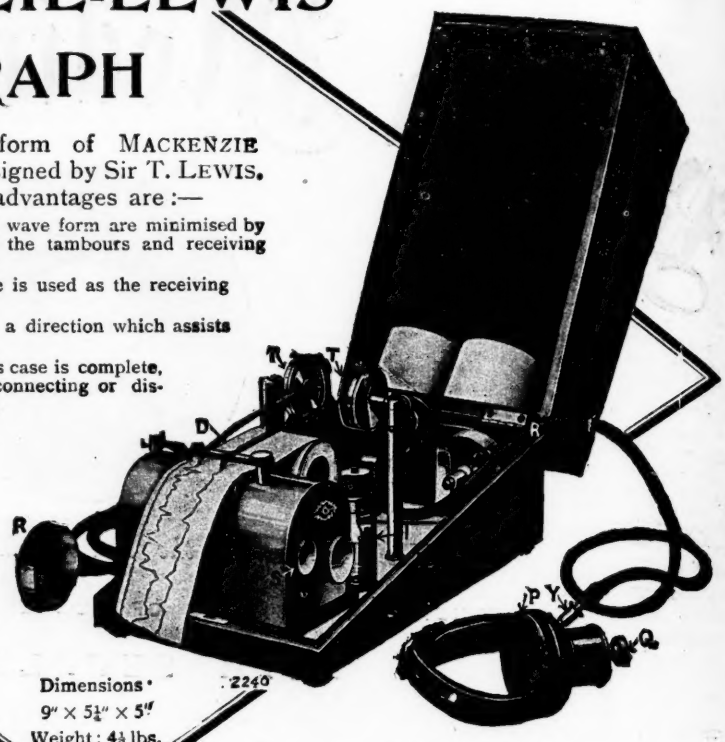

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ON
DYSPEPSIA AND THE CONDITIONS UNDERLYING IT.*

BY
LORD DAWSON OF PENN, G.C.V.O., M.D., F.R.C.P.,
PHYSICIAN TO THE LONDON HOSPITAL.

THE term "dyspepsia" is not only consecrated by time but by usefulness. It denotes disturbances of digestion mainly referable to the stomach, and due to a variety of causes, some of which reside within and others without the stomach.

With extending knowledge these causes are becoming more clearly defined. Abdominal surgery has disclosed to us the part played by anatomical lesions of the stomach, duodenum, gall bladder, and appendix in the production of dyspepsia. In fact, if we take retrospect of clinical diagnosis we are compelled to confess that our errors have been those of both omission and commission, for on the one hand many dyspepsias thought to be functional have been shown to have a structural basis, and on the other a large clinical group which was formerly styled "gastric ulcer" is now known to be associated with no such demonstrable lesion. The pain after food relieved by vomiting with epigastric tenderness and occasional haematemesis, so often complained of in out-patient departments and surgeries, the subjects usually being young females, was at one time diagnosed as due to gastric ulcer, whereas such a lesion is in these cases the exception rather than the rule. We must look rather for the explanation of such symptoms to chronic catarrh of the stomach associated with infections of teeth, gums, tonsils, sinuses, appendix, or colon. True the infective factor does not stand alone, for stasis in the colon will impair the motor and possibly the secretory functions of the stomach, as will also a sedentary life and badly ventilated workrooms. We know but little of the workings of these infections, but they show the inter-dependence of the different regions of the alimentary tract.

The physicians of past days—and they were penetrating observers—used to speak of the proneness of typhlitis to occur in patients liable to attacks of tonsillitis, and the association of appendicitis with infected tonsils may be observed with equal frequency to-day. Some years ago I urged the importance of the infective factor in gastro-intestinal disease,[1] and described cases in which the same type of streptococcus had been isolated from the tonsils, stomach, and appendix of the same patient. Further, an interesting report has been published[2] of an epidemic of severe tonsillitis in a school in which a proportion of the cases developed acute appendicitis. Probably it was a strepto-coccal infection.

The teeth, gums, and tonsils have been receiving much attention on account of the part infections of these structures are thought to play in the causation of conditions so varied as gastritis, appendicitis, cholecystitis, tonsillitis, arthritis, pyelonephritis, and anaemia. Whereas for years William Hunter and others were as those crying in the wilderness urging the significance of the septic mouth, now opinion has swung the other way, and teeth are removed with a lightheartedness that calls for protest. No one denies that a septic mouth is a potent cause of gastro-intestinal disease, and in the severer forms of mouth infection teeth have, so to speak, been removed on their obvious demerits; but in a number of cases teeth not grossly or obviously diseased are removed, and when, as sometimes happens, this sacrifice is followed by no amelioration of symptoms one is driven to inquire whether the last state of the patient is not worse than the first—a view that the victim himself is apt to share. The justification for such procedure lies in the dramatic relief from illness and improvement in health which sometimes follows the sacrifice of teeth. The difficulty lies in our inability to state with confidence that, in a given case, sepsis of the jaws is *the* cause. Dental and alveolar infection which in one patient is producing definite morbid results, in another is without apparent ill effects. Escape from this clinical quandary has yet to be found. Recent work by Rosenow and others may help towards it.[3] These investigations show that focal infections such as those of teeth and gums have a specificity as regards the lesions they produce.† Thus if, in a given patient, tooth or tonsil infection is producing gastric ulcer, or appendicitis, or both; and if, say, cultivations from this tooth or tonsil are made in glucose brain broth; and if, again, from this culture a rabbit is inoculated intravenously, at the end of a few days this rabbit will show gastric ulceration and inflammation of the appendix due to the same organism—in short, the lesion has bred true from the patient to the rabbit. If these ingenious investigations receive confirmation the actual responsibility of mouth infection in any given case might be determined, and treatment become more rational and secure.

Again, in dyspepsias directly caused by a diseased appendix and cured by its removal, the distal portion of such an appendix may be a definitely infective focus as shown by its walls and contents. Though sometimes presenting themselves in capricious guise, dyspepsias in their clinical manifestations broadly fall into three groups:

I. Pain or discomfort thirty to forty minutes after food with epigastric tenderness. Vomiting, if present, follows the pain and relieves it. Haematemesis is an occasional feature.

II. Pain two to three hours after meals (it may be with tenderness) relieved by food and alkalis—the hyperchlorhydria complex.

III. Distension and flatulence are the dominant features, and the discomforts which go with them. Vomiting and bleeding do not occur. The bowels are liable to act irregularly and incompletely.

With regard to these groups of symptoms, each of them may be associated with a structural lesion, and at other times no such demonstrable lesion is present.

The typical lesion that is suggested by the first group is gastric ulcer, by the second group duodenal ulcer, and by the third group a diseased gall bladder, and all three groups may be associated with a diseased appendix.

GROUP I.

The first group has a large representation among young women, whose pale and sallow complexions, due to anaemia and constipation, one readily recalls. It is these patients who formerly swelled the statistics of gastric ulcer and accounted for the mistaken view that gastric ulcer was easily curable by rest and milk diet. The reason why the results were so good was because the patients were not suffering from ulcer. No doubt a few have ulcer and more a diseased appendix, but the majority have no anatomical lesion, and their symptoms are due to a non-functioning colon, to faulty liver metabolism and (possibly as a consequence) excretion of toxic products into the stomach; or, in other cases, to infection from gums, pharynx, or tonsils. May I say in passing that, apart from any necessary local treatment, these cases are a strong plea for the open-air ward. They do not do well in town hospitals, but recover as if by magic with rest and graduated exercise in the open air. They bring to our minds not only the unsatisfactory results, but the economic waste of treating many diseases in expensive town hospitals, from which the patients should be transferred to the country as soon as the diagnosis has been established.

A clinical picture conforming to Group I may present considerable difficulty in diagnosis, and to this I will recur later; and here arises the significance of haematemesis. It has been shown conclusively that bleeding from the stomach does not necessarily denote any demonstrable lesion. Considerable haemorrhage may have one or several points of origin: in some instances erosions may be observed, in others not even these. The same phenomenon is observed in the uterus. On the other hand, bleeding originating in the duodenum is nearly always associated with an anatomical lesion.

A few words on the treatment of *severe* haematemesis. The difficulty of saying whether there is an anatomical lesion, and if there is such the considerable operation needed to deal with it, the bloodless patient, the dilemma either of moving him or of operating in unfavourable surroundings, combine to present us with a perplexing problem. Exceptions apart, there is a better prospect with absolute rest, morphine, an icebag, and haemostatic serum.

GROUP II.

Hyperchlorhydria may be due to many causes. It is associated with duodenal ulcer, and less pronouncedly with gastric ulcer. It is caused by lesions of the appendix and of the colon, and by functional disturbance of the latter. It may have a central origin and be the expression of overwork and the anxiety of the highly strung temperament, or it may fall into the category which is called "gouty."

* Delivered before the North Staffordshire Medical Society.
† It may be that sympathetic ophthalmia is similarly explained.

Contrasted with the other two groups a larger proportion of the cases (hyperchlorhydria complex) will have a structural basis, and if a diagnosis of functional disorder is made it will need to be periodically passed under review. Moreover, the picture of duodenal ulcer is in its entirety well defined.

GROUP III.

Cases comprised in Group III, in which distension and flatulence are the prominent features, are the most difficult to sift because the symptoms are manifestations of such a variety of conditions. Thus "fatigue" dyspepsia, the abdomen over-responsive to mental stress and strain, colitis, myocardial insufficiency, anaemias, hyperthyroidism, may show similar gastric manifestations. Side by side with these are the diseased appendix or gall bladder, which if removed would cure the patient.

No doubt careful investigation often enables correct discrimination to be made, but it must be confessed that not infrequently the evidence is too vague for us to be confident in our diagnosis, and removal of the appendix under such conditions sometimes results in disappointment.

In those doubtful cases in which there is no direct evidence of appendix disease let me suggest that the more purely gastric the manifestations the better the chance of success from operation, whereas the association of disturbed action of the colon and the passing of mucus should suggest doubt as to the wisdom of surgical interference.

Appendicitis Mimicking Gastric Disease.

A diseased appendix may be the underlying cause of any of the above three groups of symptoms, and it will sometimes mimic with extraordinary accuracy the picture of gastric and duodenal ulcer. The distinctive features of the clinical picture of ulcer, and especially of the duodenum, are orderliness and periodicity. The time relation of the pain-food sequence is constant, and, except in cases of long standing, there is complete freedom from symptoms between the attacks, which will sometimes come and go with suddenness and without reason. On the other hand, in the hyperchlorhydria complex due to a diseased appendix the time of occurrences of pain after food will be more variable, and between attacks there is seldom complete freedom from symptoms—the patient is usually more or less of a dyspeptic.

Turning to the way in which a diseased appendix sets up gastric symptoms, there would appear to be two factors—namely, the reflex interference with gastric function, and infection. An example of the former is to be seen with the fibrotic appendix, the lumen of which is more or less obliterated; an example of the latter is an appendix which, a short distance from its proximal attachment, becomes enlarged, and it may be bulbous, its mucous membrane thickened, and the contents purulent.

The fibrotic appendix is often found in the cases which resemble the ulcer picture. Keith and others have demonstrated the correlation of function of the ileo-caecal and pyloric regions. Moynihan pointed out that in chronic disease of the appendix the pyloric region of the stomach, including the sphincter, may be seen at an operation to be in a state of spasmodic contraction. The appendix, through the nerve mechanism of the ileo-caecal region, causes an excessive secretion of hydrochloric acid and motor irritability of the stomach wall. What the further or underlying agency is that causes ulcer to form we do not know. In the opinion of some investigators, it is a focal streptococcal infection.

Radiography.

With the acknowledgement of certain difficulties in diagnosis from clinical evidence alone it will be well to consider how far investigation by radiography and test meals will aid us in the types of cases just described.

We gain from radiography knowledge of the character and speed of gastro-intestinal movements and sometimes actual demonstration of pathological changes. These movements will, in a measure, depend on the substance employed. Thus barium sulphate, often used on account of its moderate cost, stimulates stomach action, whereas bismuth compounds rather retard it, with the result that barium leaves the stomach nearly twice as fast under like conditions as bismuth. It likewise travels more quickly through the small intestine, but in the large intestine the times are the same.

The following time-table of a barium meal is based on Groedel's observations of the normal stomach with a meal consisting of barium sulphate 250 grams, maize flour 20 grams, sugar 20 grams, chocolate or cocoa 20 grams, water 400 c.cm. The times are approximate; emptying of the stomach varies with the composition of the meal.

Stomach empties	1½—2 hrs.
Caecum reached	1 —1½ "
Hepatic flexure reached	2 —6 "
Splenic flexure reached	4 —8 "
Rectum reached	24 hrs. "

or

1 hour after a meal: Stomach emptying; small intestine visible; caecum may have begun to fill.
2 to 2½ hours: Stomach empty; caecum filled.
4 hours: Small intestine empty; ascending colon filled.
10 hours: Large gut filled to splenic flexure.
24 hours: Large gut filled to rectum.

The normal stomach may show variations in *shape, position,* and *size.* The shapes vary according to the muscular tone—namely, orthotonic, hypertonic, hypotonic, atonic. A stomach of normal tone holds up a considerable column of contents in its vertical portion. With less tone the vertical portion holds up proportionately less and the horizontal portion more of the meal.

The cap—formed by the distended first part of the duodenum—has in health a characteristic shape and smooth outline, and a defect in shape and outline is evidence, though not conclusive evidence, in favour of a pathological condition, such as ulcer, adhesions (for example, from cholecystitis), or pressure from an adjacent organ. On the other hand, a normal cap is evidence of value—it is, for example, against the existence of a chronic ulcer.

An opaque meal may give direct demonstration of an ulcer, fragments of bismuth being projected from the main bismuth shadow into the depression or crater of an ulcer. This method of investigation in the hands of those who have developed the requisite technical skill possesses a great and increasing reliability. As illustrating this, in one of my cases a duodenal ulcer had been diagnosed on clinical grounds. Dr. Vilvandre, from the bismuth shadows, expressed the opinion that there was not only a duodenal ulcer but a further ulcer near the lesser curvature, and this view was confirmed at operation.

An opaque meal may likewise give direct evidence of a growth owing to a deficiency of the shadow or a raggedness of edge. Such appearances would, however, portray a growth of some standing. With an early stage of growth radiography seldom helps, and its negative conclusions must not be allowed to give us false security or deter us from action.

Motility is conveniently considered with the emptying time of the stomach: under normal conditions it is about one and a half to two hours for a barium meal. In digestion the time of emptying depends on the substance swallowed. Thus with water it would be about an hour; with light gruel two and a half hours; with full milk four hours, skimmed milk two and a half hours. Fats always delay emptying. Delayed emptying may result from pyloric obstruction, either of the spasmodic or organic type, and from weak motility, which may have its cause in the stomach wall (atony) or be associated with disease of appendix, colon, or gall bladder, or, again, with heart and other diseases.

Rapid emptying may be due to irritation from acute gastric catarrh, from ulcer or early growth of stomach, from ulcer of duodenum, from certain cases of chronic appendix, hyperchlorhydria, disease of colon, hyperthyroidism, and irritability due to nerve strain, etc. It is thus seen that inferences from rapid emptying must be made with caution.

A chronic appendix with the dyspeptic manifestations conforming to Groups I and III described above would most often be associated with delayed emptying, whereas as regards Group II the emptying would be accelerated. Often hyperchlorhydria has a tendency to acclerate and an associated spasm of the pylorus to delay emptying. As regards duodenal ulcer, emptying may be hurried in some cases and not in others.

Tenderness on palpation over the stomach and duodenum during radiographic examination may easily be misleading.

Test Meals.

The technique of test meals has been improved by enabling the contents of the stomach to be analysed at intervals during digestion instead of only once—for example, an hour after ingestion.

An adaptation of the Einhorn tube is employed. The patient swallows this into an empty stomach. By means of a syringe samples can be withdrawn. The fasting contents are first examined, then the patient swallows, with the tube in position, one pint of a thin test gruel, and samples of the contents are withdrawn at intervals of a quarter of an hour

and examined, and their free and total acidity determined in terms of a decinormal soda solution, and charted. The presence of pepsin, mucus, bile, and blood, the time of their appearance and disappearance, and the time of emptying of the stomach can be recorded.[4]

If it is desired to investigate the stomach bacteriologically the fasting content can be examined in films and by culture. Cases comprised under Group II least often, and those under Group III most often, disclose positive results.

To examine the duodenal contents the patient lies on the right side as soon as the tube has entered the fasting stomach, and in due course the tube will enter the duodenum, which can be established by the fluid becoming alkaline and by *x*-ray examination. Also a certain grip is felt when the tube is in the duodenum.

The normal stomach shows on average a maximum free acidity of 30 (0.109) and a total acidity of 50 (0.182). In contrast with this a duodenal ulcer may give a free acidity of 70 or more, and a total acidity of 80 or 90; an acidity which is associated with rapid emptying—say in an hour—is less sustained than an acidity which is associated with emptying in two and a half hours. On the other hand, there is the absence of free acid and the low total acidity (10 to 30) found in malignant growths, pernicious anaemia, and other conditions.

MALIGNANT DISEASE OF THE STOMACH.

When it is recalled how large a proportion of cancers arise in the stomach (according to some authorities 50 per cent.), and when it is realized that operative treatment of stomach cancer in its early stage is followed by encouraging results, the importance of the recognition of this condition is patent.

In its early stages the manifestations are vague, and there may be an entire absence of symptom or sign till the disease has advanced so considerably as to be incapable of effective treatment. It follows, therefore, that close attention needs to be paid to ill-defined dyspeptic symptoms, and especially in people whose digestions have hitherto been strong. Constant watch and systematic investigation should be the rule. And in patients whose general health is deteriorating a systematic search for the cause should include an investigation of the stomach even though gastric manifestations may be absent.

Well-defined pain is seldom an early feature, and here is a distinction from ulcer. There are often distension and discomfort, but not often pain. Even later there may be a considerable infiltration of the stomach with growth, and yet but little pain.

Vomiting is seldom an early sign, though it may be one of the first signs of a pyloric cancer. Haematemesis may be the first intimation that anything is wrong, though in such cases the growth is seldom found to be early. A tumour that can be clinically detected must never be expected.

A dilated stomach may be the first though not an early sign. Loss of appetite is valuable evidence, and sometimes occurs early, though in other cases a good appetite endures till late in the disease.

Anaemia may attract attention and be a feature of vaguely declining health, and the similarity between the manifestations of malignant disease of the stomach and those of pernicious anaemia are well known. There is often, too, a depression and gloominess of outlook which are suggestive.

A physician rightly puts reliance on his intuition in these doubtful cases, and is thus prompted to proceed to further investigation. The examination of fasting contents, of a test meal in the manner already referred to, the search for occult blood, will afford evidence of value.

As already stated, radiography must not be expected to yield positive assistance in the diagnosis of early stages of malignant growth, unless the latter begins as an ulcer. Perhaps when it becomes practicable to study radiograms serially at short intervals, earlier detection may become possible. If, however, an early growth is situated at the pylorus, radiography may afford evidence of its effects. At a later stage growth near the pylorus may cause a defect in the filling of bismuth. The defect may be annular in shape and appearance, or the growth may cause a "biting out" of the bismuth and an irregularity of its outline.

In this kind of investigation bismuth is better than barium because it stays for a longer time in the stomach and is not stimulating to the movements of the latter.

If the results of the foregoing investigations, carefully considered, lead to the conclusion or even the suspicion that malignant disease may be present exploration should be advised, and although this line of action sometimes will lead to negative results and unnecessary operations, this is of far less importance than the missing of an early carcinoma in a situation where removal can offer favourable prospects.

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EFFECTS OF CHRONIC STARVATION DURING THE SIEGE OF KUT.

BY

MAJOR-GENERAL SIR PATRICK HEHIR, K.C.I.E., C.B., C.M.G., I.M.S.,

LATE A.D.M.S. 6TH (POONA) DIVISION.

THE siege of Kut lasted 148 days, from December 4th, 1915, to April 29th, 1916. The besieged garrison consisted of the 6th (Poona) Division, supplemented by various details. The strength on December 8th, 1915, was 14,586; this included British officers 218, British rank and file 2,534, Indian officers 175, Indian rank and file 8,117, followers 3,542. Of this number 1,508 were sick and wounded in hospital.

The following notes were prepared with the view to placing on record the state of nutrition and general health of the Kut force during the penultimate week of the siege—April 11th to 18th, 1916; they were completed and submitted to the G.O.C., Major-General Sir Charles Townshend, K.C.B., D.S.O., on April 28th, the day before the capitulation. They are published now for the first time. As may be understood I was not in a condition of health and strength to take full advantage of the material at my disposal; even this meagre record called for some effort of will. The siege afforded opportunities for studying the morbid state of the body brought about by long-continued deprivation of an adequate quantity of suitable food which seldom present themselves; it would have been almost criminal to have disregarded them.

During 1915 the 6th (Poona) Division experienced severe hot weather and an epidemic of malaria in Lower Mesopotamia, and immediately before the siege underwent great physical strain and exceptional hardships on the march to the battle of Ctesiphon, during the battle (November 22nd to 24th, 1915), and in the retirement from Ctesiphon to Kut, where they arrived in a worn-out state on December 3rd, 1915. During the early days of the siege the preparation of the defence works threw a considerable amount of labour on the troops. It was in the circumstances considered advisable to let them build up part of their tissue losses for a week or so before beginning to reduce their rations; this reduction was then made gradually. Most of the garrison were in trenches and dug-outs; the remainder were billeted in huts or bivouacked, or were in tents with the floors sunk several feet.

Meteorological Conditions.—During the months of December and January and the first half of February it was decidedly cold; from January 15th to February 8th it froze every night. The ill effects of the cold were intensified by high winds and rain storms. From January 17th to 20th the trenches were flooded with ice-cold water. On January 20th twenty-four Indians were brought out of the front trenches collapsed from the cold, and were resuscitated with much difficulty; five others were found to be dead—cold and stiff. After the middle of February warmer weather set in.

The Rations of the Kut Garrison.

To grasp the state of nutrition of the garrison towards the end of the siege it would be well to bear in mind the usual classification of foodstuffs, the physiological bases upon which rations for bodies of men such as soldiers are formulated, and the functions carried out by each class. The rations of the British soldier in Mesopotamia before the siege had a heat equivalent of 3,600 calories, that of the Indian 3,100 calories.

The Protein Factor.—British troops did comparatively well as regards their protein ration during the siege. When fresh beef and bouilli were exhausted they were given 1 lb. of horseflesh, which was increased to 1¼ lb., next to 1½ lb., and then to 1¾ lb., but finally reduced to 1½ lb. again. While the ration of bread was not below 10 oz. and the butter and bacon continued, this amount of horseflesh prevented any rapid loss

of weight and stamina, but when the loaf was reduced to 8 oz. and all butter and bacon ceased, they began to lose flesh and condition rapidly—the oxidizable material in the bread and horseflesh combined was insufficient, and they started using part of the protein of their muscles for the production of force and maintenance of the temperature of the body. In Indians, except those who had eaten horseflesh from the beginning, the muscles began to waste rapidly as soon as *ghi* underwent a serious reduction, and in all except those who were highly developed physically at the beginning of the siege the muscles dwindled considerably.

The Hydrocarbon Factor.—From a physiological point of view the most serious deprivation suffered by British troops was the absence of hydrocarbons. Bacon and butter failed at a comparatively early stage of the siege. In ordinary circumstances this would have been to some extent compensated for by the large ration of horseflesh allowed, and at the beginning this was so, but during the last ten weeks of the siege the animals themselves were in such a state of starvation that no fat remained in their tissues. They could not go out to graze, as we were within gun and rifle range of the enemy on three sides. From about the end of March British troops were definitely in a state of partial starvation, and were losing ground daily; they were lacking in energy, debilitated, and incapable of any serious strain. The Indian troops received a progressively reduced ration of *ghi*, which was only 1 oz. daily from March 11th, and ceased altogether early in April. Until the second week in April only about one-ninth of the Indians were eating horseflesh, so that the small amount of fat obtained from this source is almost negligible. Indian troops had by that time reached an advanced stage of chronic starvation; their energies were markedly reduced, they were debilitated, less capable than the British of any severe physical strain, and they possessed little resistance to disease.

The early stage of the siege at which the fats and carbohydrates of the rations of British troops and Indians had to be reduced soon led to a loss in body weight, which was naturally to a large extent at the expense of the adipose tissue of the body. There were some men who began the siege in a highly muscular state and with a fair covering of fat, who did not show any serious signs of diminution in bulk, but in the vast majority it may be stated that a large part of their body fat had been burnt up by April 15th; many British troops were decidedly attenuated, especially among the younger men, while about 10 per cent. of Indian troops and followers were really emaciated.

The Carbohydrate Factor.—The greatly reduced ration of the garrison in carbohydrates (the average reduction of bread in British troops during the five months of the siege was 50 per cent., and of the *atta* of Indian troops 66 per cent.; during the last six weeks neither sugar, *gur*, butter, nor *ghi* was available) led to the removal of nearly all glycogen from the liver and muscles, so that the amount of stored material readily assimilable in the tissues for energy and heat production during the penultimate fortnight of the siege was at a minimum. This fact was demonstrated by the case with which the men became fatigued, their inclination to remain at complete rest whenever opportunity offered, and the speed with which they collapsed, with a marked subnormal temperature, when they had the misfortune to get an attack of diarrhoea or any other malady causing a drain on the system. It likewise helped to explain how difficult it was to restore the heat of the body once it was lost. British troops especially felt the want of more bread, which forms a large part of their food normally; they also had urgent cravings for fats and sugar; there was a very marked yearning for tea. In the same way Indians had a great longing for more *chuppatties* and *gur*.

Inorganic Salts.—Shortage of salt in the rations of both British and Indian troops and followers began about the middle of the siege, after which time the salt issue underwent great reduction, the troops receiving only about one-eighth the normal ration. Early in April it ceased altogether except for a small issue made for a few days from some bags of salt that were dropped into Kut by aeroplanes. I was not able to gauge satisfactorily the extent to which this deprivation affected the nutrition and health of the troops. It is possible that some of the cases of diarrhoea and gastro-intestinal disturbance that prevailed during the last two months of the siege were partly attributable to a want of sufficient salt in the food.

It is well to bear in mind the very important differences between acute starvation, in which there is complete and sudden deprivation of all food, and chronic starvation such as we went through, in which there is continuous use of an insufficient supply of food of a kind unsuitable to maintain the normal standard of nutrition. In acute starvation until death actually happens it is possible to restore the victim to health and strength once more by an appropriate regimen; in chronic starvation a stage is eventually reached, sometimes weeks before death, from which recovery is impossible.

The following lists give the quantities of the various articles of diet used by the Kut garrison, and show the progressive reduction of some and disappearance of most of them from the rations in the penultimate and final stages of the siege.

Tables of Rations issued during the Siege.

On January 22nd, 1916, and for some weeks after, the rations consisted of:

British Troops.		*Indian Troops and Followers.*	
Bread, white	12 oz.	Atta	8 oz.
Meat	8 ,,	Rice	8 ,,
Butter or cheese	3 ,,	Gur	½ ,,
Potato meal	2 ,,	Ghi	2 ,,
Pickles	1 ,,	Ginger	½ ,,
Jam	3 ,,	Dhall (lentils)	2 ,,
Dates	2 ,,	Chillies	½ ,,
Tea	½ ,,	Garlic	½ ,,
Sugar	½ ,,	Dates	3 ,,
Salt	½ ,,	Potato meal	2 ,,
Ginger	½ ,,	Salt	½ ,,
Fuel	2 lb.	Fuel	1 lb.

On March 11th, and for some weeks afterwards, the rations consisted of:

British Troops.		*Indian Troops and Followers.*	
Brown bread	10 oz.	Barley flour	10 oz.
Horseflesh	1½ lb.	Barley, unhusked	4 ,,
Jam	1 oz.	Ghi	1 ,,
Salt	¼ ,,	Salt	¼ ,,
Oatmeal	2 ,,	Horseflesh (to those who eat it)	8 ,,

This British diet is equivalent to 1,975 and the Indian to 1,550 calories. Up to April 12th the heat equivalent of the Indian rations in non-meat eaters was:

Barley flour	10 oz.	700 calories.
Barley, unhusked and parched	4 ,,	240 ,,
Ghi	1 ,,	65 ,,
Herbs (grass, etc.) as vegetables	4 ,,	40 ,,
Total		1,045 calories.

The rations from April 12th onwards with their heat equivalents were:

British Troops.

Brown bread	6 oz.	390 calories.
Lean horseflesh	24 ,,	1,440 ,,
Green stuff, herbs, and grass	2 ,,	20 ,,
Total		1,850 calories.

Indian Troops and Followers.

Coarse barley flour	5 oz.	350 calories.
Lean horseflesh	12 ,,	720 ,,
Green stuff, herbs, and grass	4 ,,	40 ,,
Total		1,110 calories.

Up to April 8th only about 1,000 out of over 10,000 Indians were eating horseflesh; on April 14th 9,239 Indians were consuming it.

In British troops, after the first fortnight of the siege, the bread ration was reduced to 12 oz., six weeks later to 10 oz., then to 8, and in the last weeks to 6 oz. For about four weeks fresh beef was issued, then bouilli beef or mutton for three weeks, then fresh beef of battery bullocks, after which horseflesh was commenced. Fresh vegetables, potatoes, and onions ceased early in February, but a ration of potato meal was continued for about a fortnight later. Butter and bacon were reduced at an early stage and ceased about the middle of February. The jam ration was very gradually lessened and ceased at the end of March. Tea and sugar were exhausted after the second week in February, then dates replaced the sugar for a fortnight.

In Indians who ate it the fresh meat ration was cut down to 6 oz. after the first week of the siege, later to 4 oz. At the end of the first week the *atta* (coarse wheaten flour) was reduced to 1½ lb., then to 1 lb. with 6 oz. of parched unhusked barley; later to 8 oz. *atta* and 8 oz. rice, then to barley flour 10 oz. and 4 oz. parched barley, and finally to 5 oz. barley flour only. During the first week of the siege the full ration of 2 oz. of *ghi* (clarified butter) was given, then for a month 1½ oz., for another month 1 oz., for two months 1/2 oz., and during the last two weeks none. For the first week of the siege the full ration of 4 oz. *dhall* (lentils) was given, then it was reduced successively to 2 oz. and 1 oz., the issue ceasing at the beginning of March. *Gur* (jaggery or unrefined sugar) ceased about the middle of March, when its place for a fortnight was taken by an issue of dates.

During the first ten weeks of the siege the billeted part of the garrison was able to supplement the rations issued by purchase of barley cakes fried in fat sold by Arab confectioners, also small quantities of *atta*, barley flour, *dhall*, sweetmeats, and dates. These gradually disappeared from the market, and for the last six weeks only negligible quantities of eatables were purchasable. The heat equivalents of these fortuitous foods were not estimated

as nothing approaching accuracy could have been obtained. These supplementary additions, however, were of significant value to the garrison.

On April 25th I noted: "On an average fifteen men are dying daily; of these, five a day are dying from the direct effects of chronic starvation, and ten from chronic starvation with diarrhoea, bronchitis, or some other simple malady supervening. The present condition of nutrition and health of the average man of the garrison is physiologically highly unsatisfactory. His stamina is greatly lowered, his resistance to disease-causes considerably reduced, and should he suffer from any disease, such as pneumonia or bronchitis, fever from any cause, dysentery, or severe diarrhoea, it will greatly tax his vital powers."

Loss of Weight in Chronic Starvation.—During the nineteenth week of the siege I had the weight of 400 healthy British and 800 healthy Indian troops at duty taken with the view to ascertaining the average loss during the siege. The weights were taken on the same scales, at the same time in relation to meals, and in the same kind of clothes. British troops on an average lost 12.5 lb. per man and Indian troops 17 lb., which was, roughly, a loss of 10 per cent. in weight in the former and 14 per cent. in the latter. Personally I started the siege weighing 10 st. 6 lb., and at the end of it weighed 8 st. 11 lb.; my normal weight is 10 st. 12½ lb. The loss of weight reached its maximum in officers and men who began the siege with a superabundance of fat, and it may be remarked that they stood the loss well. The average loss of weight given above was that which occurred during the siege. It may not appear excessive, but, as stated in the introduction, the force had immediately antecedent to the siege lost a certain undetermined amount of weight from hardships and privations. The average weight in one platoon of Rajpoots on April 16th was 7 st. 12 lb., and in one of Jats 7 st. 10½ lb., as compared with their normal weights of 9 st. 3 lb. and 9 st. 1 lb. respectively.

Lowering of Body Temperature in Chronic Starvation.—In chronic starvation the temperature tends to fall very gradually. The temperature of healthy British and Indian troops during the three days April 17th, 18th, and 19th, 1916, was lower than normal. The average morning temperature in 200 British troops was 96.13° F., and in 260 Indian troops 95.84°. The average evening temperatures in the same men were: British 97.41°, Indians 97.03°. These observations were accurately made and the usual precautions to eliminate error adopted. In some cases in hospital the temperature was less than 90° F. just before death. We had Indians going about at duty with temperatures between 94° and 95°. My own temperature was never above 97° for the last six weeks of the siege, and during the last fortnight it varied from 96° to 96.8°. I was seemingly in good health, bar the effects of short commons. We did not meet with the great diurnal variations or fluctuations of body temperature that have been recorded in some cases of acute and chronic starvation.

On April 17th I wrote: "The present condition of the average officer and fighting man who began the siege in fair physique and with a normal deposit of adipose tissue, and who has not suffered from any disease nor been able to supplement his rations from any exceptional sources, may be described as follows: He has lost weight, in particular his muscles have materially decreased in size and about 80 per cent. of his adipose tissue has disappeared; he is much below par in stamina, and, without feeling any decided weakness, he is incapable of doing anything approaching the normal amount of physical or mental work; in moving about his lower limbs feel a trifle heavy; he tires comparatively soon and welcomes a rest after an outing, walk, or short spell of fatigue duty. During work he is disposed to be affected by a temporary giddiness, especially on bending down or after an effort demanding some physical strain, and he perspires more readily than usual. Whilst he does not suffer in any way, he has the usual sensation of emptiness felt about the epigastrium, which is temporarily alleviated by a meal, especially a warm one. His temperature is a few degrees below normal, and his pulse rate from 8 to 10 beats per minute slower than normal. He sleeps well, completely digests what he eats, his bowels are regular; in practically every one there has been an occasional attack of simple diarrhoea which is evanescent. This latter may be connected with the coarse bread or *chuppatties*, and use of such extraneous articles of food as the green herbs and grass collected from the plain as substitutes for vegetables. On the ration now being issued the garrison could continue for some time, but at the end of another fortnight we should be very reduced in weight and unfit for any work calling for much physical exertion. A certain undefinable proportion of the garrison will reach this latter stage long before a month's time; some have reached it already, and a progressively increasing number will reach it from now onwards."

During the last month of the siege men at fatigues, such as trench-digging, after ten minutes' work had to rest a while and go at it again; men on sentry-go would drop down from syncope (the spell of this duty had to be reduced to one hour instead of two); those carrying loads would rest every hundred yards or so. In many instances Indians returning in the evening after lining the trenches all day, seemingly with nothing the matter with them, would be found dead, cold, and stiff in the morning, death being due to exhaustion of the vital processes resulting from starvation. I saw one dead man lying on his back with a *chuppattie* in his hand near his mouth. It was natural that men in such a low state of health and vitality could stand little in the shape of illness—an attack of simple diarrhoea, for instance, that would have been got rid of in a day or so at the beginning of the siege in March and April often ended fatally; all recuperative and rallying power had gone. Personally up to the middle of March I could make a complete round of the front line trenches and fort (about five miles) in the morning; I had then to halve it, and at the end of April while doing the half I had to take it very quietly, and even then rest every 200 yards or so; practically all officers were in a similar condition of physical incapacity.

Inclination to Sleep in Chronic Starvation.—During the last days of the siege there was an increased tendency to sleep, a greater lowering of temperature, and a still slower pulse rate. If any disease (such as severe diarrhoea) intervened, these phenomena were exaggerated and death rapidly ensued. During the later periods of slow starvation there is practically no actual suffering even when such a disease as dysentery is present. In fatal cases so imperceptibly does life ebb away that it is sometimes not easy to say whether the man is really dead or not.

Reduction of Pulse Rate in Chronic Starvation.—It is sometimes stated that the rate of the pulse continues practically normal until a few days before death from chronic starvation. This is not the case. In the nineteenth week of the siege the average pulse rate in 200 odd cases in whom observations were continued thrice daily for a week was nine beats less per minute than normal. After the middle of April in many men the pulse rate was suddenly increased on the occurrence of impending danger, during an attack by the enemy or an exceptionally severe strafing from aerial bombs or even small-arm fire. The same occurred during severe exercise. A very slow pulse rate, from 30 to 40 per minute, was met with in many cases, both in hospital and at duty.

Mental Attitude of Garrison during the Siege.—During the first two months of the siege both British and Indian troops were moderately cheerful; for the next six weeks or so they were more subdued. For the last month without being depressed or melancholy they became somewhat cheerless, and during the last fortnight manifestations of mirth and vivacity had disappeared. Personally I was astonished at the patience and fortitude with which the garrison endured the terrible hardships they went through. I was amongst the men practically every day from the beginning to the end of the siege, and write from intimate knowledge of the conditions. The grit shown by our British and Indian soldiers was beyond all praise. "The behaviour of the men in meeting the unfortunate circumstances in which they are placed is heroic" (Diary, April 25th, 1916).

CHIEF DISEASES DURING THE SIEGE.

Diarrhoea.—This was by far the most prevalent disorder met with during the siege. On April 16th I entered in my diary:

"During the last two months there has been a high incidence of diarrhoea. In March this disorder was of a mild type and the vast majority of cases were treated regimentally, a few days' rest and medicine rectifying the disturbance. Early in April we began getting cases of very watery and severe diarrhoea with vomiting, cramps in the legs and abdomen, profound prostration, subnormal temperature, pulselessness, suppression of urine, and collapse. The majority of these cases rallied, but many of them became intensely collapsed and died on the second, third, or fourth day, some after a feeble attempt at reaction, most of them without manifesting any dispcsition to recover. I have seen practically all these cases; they were not true Asiatic cholera, though clinically very like it. It is not infectious; none of the attendants so far have been affected, and it occurs scattered in platoons and not in groups. The stools have not the well-known rice-water characters of cholera; they always contain a certain amount of bile; there is not the same degree of shrinking of the features, nor the change in the voice met with in cholera, and the mortality is much lower than in that disease. In a large number of instances the stools were examined by a bacteriologist expert, Captain H. H. King, I.M.S., and in none were cholera spirilla discovered."

The essential cause in all these cases was chronic starvation. The men had got into such a state of debility and wasting from shortage of food that any added strain on the economy, such as diarrhoea, was sufficient to lead to speedy dissolution. The disease continued epidemically after we got to the prisoners' camp, Shamran, where during May we had

over 1,500 cases and about 200 deaths from it. I was of opinion that the vast majority of these were ordinary cases of diarrhoea in men whose resistance had disappeared, whose stamina was greatly lowered, and whose heat-generating powers were so reduced that once a drain of any kind occurred from the body they were incapable of rallying; the low state of vitality, and especially the absence of any fuel in the system, rendered resuscitation impossible or highly improbable. The condition is one of the common accompaniments of every lasting famine in India, and has during these famines been repeatedly mistaken for genuine cholera. In the terrible and widespread famine of 1877–78 in India this form of diarrhoea was responsible for the death of most of the famine-stricken.

Dysentery.—A large number of diarrhoea cases merged into a form of dysentery that might pathologically be called catarrhal. The total number admitted into hospital with the clinical symptoms of dysentery was 684. There was besides a large number of slight cases treated regimentally; it might indeed be stated that it attacked a very high percentage of all ranks of the garrison at one time or another during the siege. It was relatively more frequent in Indian than British troops, and was of less severity and associated with a lower mortality and more amenable to treatment in the latter. Pathologically it varied in its intensity from a mild catarrhal inflammation to widespread destruction of the large bowel, and even of the lower part of the small intestine. In the penultimate and final stages of the siege medical officers were unanimously of opinion that the disease did not yield to treatment as satisfactorily as in the earlier stages. The symptoms and course of the disease were something like those of bacillary dysentery, but its real bacteriological relations, if any existed, were not determined. This condition was a particularly fatal terminal complication of scurvy.

Chronic Starvation Debility. — There are reasons for considering that there is a definite pathological state with a fairly well defined clinical course in chronic starvation debility. A general weakness without any assignable cause except the defects in the rations was naturally the commonest condition met with in the siege, and finally affected the entire garrison. It assumed graver forms in Indians than in Europeans. We noticed in hundreds of Indians that there is a stage in the downward path in chronic starvation from which recuperation cannot take place, that after the effects of starvation had reached a stage that is difficult to define, recovery was hopeless, as no possible measures appeared to have the power of restoring the victim. It is a condition of inanition in which it might reasonably be declared that all capacity to assimilate food has permanently disappeared; the glands and tissues engaged in the digestion and assimilation of food have wasted so much as to cease to function, the atrophy of these glands and tissues arising from their disintegration in helping to keep life going. This stage may or may not be associated with the diarrhoea or dysentery alluded to above; in many cases it passes almost imperceptibly into death. When soldiers doing their ordinary duties during a siege are living on less than a mere subsistence diet changes are occurring in their assimilative organs and tissues which, if continued, will lead inevitably to death. The pathological processes in operation in chronic starvation indicate that if relief is to be of service to the victims it should be commenced before the stage under reference has been reached. Enough has been said to indicate that advanced chronic starvation is necessarily associated with a very high mortality.

Scurvy.—Indian troops went through a serious outbreak of scurvy; during the siege it caused 1,050 admissions. A few cases appeared early in January; the incidence gradually rose, and in the middle of January we had 140 cases in hospital; at the end of March there were 597 cases under treatment, after which time it gradually declined. These do not include the incipient undeveloped cases which for military reasons were obliged to keep at duty, nor the latent cases. With the exception of chronic starvation itself nothing undermined the stamina of the Indian troops more than scurvy.

The essential differences between the diet of British and Indian troops were that British ate horseflesh and Indians until near the capitulation did not; Indian troops used *dhall* and British did not; British used white flour or biscuits made of it for a large part of the time, Indians used *atta* or coarse barley flour. The British got beri-beri and no scurvy, the Indians got scurvy and no beri-beri.

Beri-beri.—This disease gave rise to 155 admissions in Kut, all in British troops. These cases were the continuation of an alarming outbreak that began at Aziziyeh (a post about half-way between Kut and Baghdad) in October, 1915. There were besides many undeveloped or incipient cases that continued at duty. Short of producing obvious clinical beri-beri a diet deficient in special directions brings on gradually a condition of lowered stamina and vital energy and of inefficiency. This is a change to be watched for—a danger signal.

TREATMENT OF CHRONIC STARVATION.

It is essentially necessary after long periods of partial starvation to exercise the greatest caution and discretion in returning to ordinary food. Death frequently occurs in those who after forced abstinence of some duration suddenly and completely gratify the natural cravings of hunger. The whole digestive apparatus is in a weakened state, and the various glands in and around the intestines that take part in the process of digestion have undergone atrophy, and their functioning power has to be restored before they can resume work normally. The activities of the digestive organs and metabolic processes have necessarily been sluggish, and any sudden demands made upon these functions are liable to be followed by a breakdown in the machinery. The main indications in attempting to restore those in advanced starvation are—maintenance of the warmth of the body and the administration of readily assimilated warm liquid nourishment. Rest and the application of warmth (if the weather requires it) are very comforting.

When circumstances allow of it only the most digestible substances should be sparingly partaken of at short intervals—milk (which is the great standby), beef-tea, meat juices, broths, prepared farinaceous and partially digested liquid animal foods, white of egg, etc., solid food being eschewed for some days, then beginning with white fish, rice, bread, butter, and fatty food, meats, and vegetables in gradually increasing quantities, the normal amount not being administered for some months. Digestibility and nutritive capacity are the main points in the foods given. Solid food of any kind is at first quite inadmissible; any attempt made to consume ordinary solid food, no matter how urgent the cravings for it may be, is likely to be followed by serious reaction. Everyone who went through the siege of Kut required to be taken into hospital, nursed, and treated on the lines indicated above if the consequences of their chronic starvation were to be averted. Instead of that the garrison was, on capitulation, put on the coarse rations of the Turks at once, and within three weeks sent on a 1,000-mile march, much of it through an arid desert *en route* to various places in Asia Minor. We had published in division orders during the last week of the siege a warning as to the dangers associated with returning to normal diet after long-continued partial starvation. There being no suitable food available, and human nature being what it is, as soon as the Turks' rations were issued, especially the coarse, hard, brown rye bread and biscuits, which caused intense irritation in the stomach and intestines, a large number of British and Indian troops and followers gorged themselves with it. The immediate result was the occurrence of a violent epidemic of a disease that had all the clinical characters of cholera as already described.

During the last two months of the siege the energies of the garrison were carefully husbanded; only the most indispensable fatigues were ordered, guards and outpost duty were reduced to the lowest possible minimum compatible with the military situation, and when men began fainting on "sentry-go" at the beginning of April the two hours' spell was reduced to one hour.

It was a long time before those who went through the siege of Kut regained their normal weight; in my own case it was about one and a half years. This appears to be in accordance with the experience of all long sieges of which we have record. The digestive glands of the stomach and intestines, the pancreas, and liver, have undergone considerable atrophy, and are long in recovering their normal functional activity. It was about two years before I personally could comfortably consume a normal meal as regards quantity; earlier than that any attempt to eat the amount of food I had been accustomed to before the siege was at once followed by unpleasant effects, which, however, caused only temporary inconvenience.

I have often been asked what rations remained at the time of the surrender. On April 29th, 1916, the only food left was twenty-nine emaciated artillery horses; on that date there was not a pound of flour, *atta*, barley, or any other foodstuff available. As the Turks failed to provide any food until April 31st, the sick and wounded in hospital (about 2,500) got no rations at all on April 30th. The troops at duty marched to Shamran on April 29th, the Turks occupying Kut the same day.

CANCER OF THE BREAST.

*TREATMENT OF THE PROEMIAL BREAST.**

BY

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[*With Special Plate.*]

No surgeon of experience can be satisfied with the results obtained by the present surgical treatment of cancer when it arises primarily in the breast.

The object of this paper is to direct attention to the existence of a potentially dangerous state of the breast, and to indicate the advisability of removal of a breast in this state rather than wait for the evidence of disease for which surgical measures have been proved to be so unsatisfactory. The consideration of the following facts explains why surgical measures are so often doomed to failure when primary cancer is clinically recognizable as such in the breast.

First. It is an aphorism that cancer of the breast must have developed considerably before it has attracted attention to its presence. By the time it has made itself manifest it too often has spread beyond the limit of the most extensive and skilful operation.

Second. The dilemma is really worse than this bald statement makes it appear, for the patient is usually the first to discover the indications of a tumour. Unfortunately her next step too often depends upon the relative importance she attaches to their warnings. When she regards them as relatively unimportant there will be delay in receiving the treatment which should be adopted at the earliest possible stage.

Third. While all are familiar with examples of complete surgical successes in cancer of the breast, we also know that the number of complete surgical failures is too great to justify an attitude of passive contentment with the present treatment. Moreover, the successes claimed within a few years of the operations have often proved illusive. Operative measures upon cancer of the breast have been followed by complete quiescence for ten and twelve years. Success assumed on a post-operative limit of quiescence for five years or so must be regarded as too optimistic.

Fourth. In some breasts which have been excised because they were considered to be in the proemial state I have found I was wrong and that they contained tumours. Upon careful microscopical examination of whole sections of separate breasts I discovered in them tumours of the following kinds: (1) simple papillomata, (2) papillomata the innocence of which is exceedingly doubtful, (3) malignant papillomata, and (4) one with a small cancer which was infiltrating fat outside the gland. In addition to my own patients I must refer to two others. Mr. Sampson Handley kindly sent me a breast for microscopical examination. I had seen the case clinically, and then I regarded it in the proemial state. In one of the large ducts I found a papilloma the benign nature of which is open to considerable doubt. My colleague, Mr. Burghard, who has given me great encouragement by showing his interest in my work, also kindly sent me a breast which I should have described upon clinical examination as also being in the proemial state. It was only by very careful microscopical examination of whole sections that we discovered a small cancer within the breast and infiltrating the fat outside the gland, also an apparently simple papilloma in a duct in another part of the gland. In all these patients clinical signs of tumours were absent.

Taking into consideration the whole position, it would be of great surgical importance could a line of treatment be indicated that would deal adequately with breasts in which cancer or papillomata were likely to occur, and not, as we do now, devote our attention to those breasts in which these diseases are definitely present. An absolute indication of this line of treatment would be of basic importance, and its establishment as a regular surgical procedure would be a great step in the direction of safety.

I hope to prove that there is a condition of the breast which is a prelude to those particular pathological changes to which I have alluded. I name it the "proemial breast." I am so fully convinced that I have already begun treating breasts on this assumption. Careful microscopical examination revealed in some of them the early stages of the diseases I had hoped to be in time to prevent. I take these facts as offering remarkable evidence in my favour and supporting my belief that there is such a thing as a proemial breast.

Before I describe the characteristic features of the proemial breast it is essential to clear the ground in one important respect. It is a fallacy to maintain that every breast that appears nodular on palpation is in a pathological state. Provided there be not too great a layer of superjacent fat most adult female breasts are multinodular on palpation. The multiple nodules are mainly prominent parts of mammary ducts, and can be recognized as such by careful observation. Palpation should be continued in the normal directions of the ducts, of which the "nodule" is only a part, bearing in mind that a duct becomes smaller in calibre the nearer it is to the periphery of the gland. The examination is conducted best by supporting the pendent breast with one hand and palpating it with the fingers of the other. Also it must be borne in mind that the vascular turgescence of puberty, menstruation, and pregnancy increases the size of the glandular structures and may render them painful. It is possible that physiological turgescence may occur from other causes. Therefore I attach importance to the facts that in all such conditions the whole of the gland, and not only a part of it, would be taking part in the disturbance, and that the multiple nodules would be of the same size when corresponding parts of the same breast were compared. To make sure that the condition be physiological it is essential to examine the breast when the cause of the turgescence has passed.

Ducts are more accessible to palpation than the acini because they are more rigid in structure and towards the nipple more superficial in position.

THE PROEMIAL BREAST.

The proemial breast is worthy of due recognition in future pathological and clinical considerations for two reasons: (1) It is in a state that makes it a prelude to further pathological changes of a highly important character—mainly simple papillomata, malignant papillomata, and other forms of cancer. (2) Its clinical recognition and adequate treatment occasionally enables the surgeon to recognize (microscopically) the presence of one or more of these changes, before any clinical sign of their existence is obtainable by any other means—that is to say, when the proemial breast has merged into those profoundly important stages to which it has acted as a prelude. When once established the condition of the proemial breast is permanent. To describe next its clinical and pathological appearances, and its treatment:

Clinical.

The patient, who has generally reached the age of from 40 to 45 years, complains of pains in the breast. Occasionally it is so severe and has lasted so long that in spite of all kinds of treatment she can bear it no longer, and insists on having the breast removed. Generally the pain is not so severe and is of an aching character which is not always affected by menstruation. On questioning the patient, it is found that the pain began sometimes as early as 30 years of age—more often it commenced somewhat later; also that it may have lasted some six months or one, two, three, or more years. The pain is continuous. On examination both breasts may appear multinodular. But while the nodules of the unaffected breast correspond to the signs I have described as indicating a normal breast, the nodules of the diseased breast are swollen, painful and tender on palpation, and are not of the same size in corresponding parts of the same gland. Sometimes a nodule at the periphery is bigger than one situated nearer the nipple. Careful palpation reveals the fact that the swollen nodules are mainly composed of prominent parts of tortuous ducts. The state of affairs may be limited to a segment of the breast, or two segments, one of which may be on the opposite side of the same breast, of which the intervening parts are normal. Or the whole gland may be affected by the same disturbance. There may be an intermittent or continuous discharge of serum from the nipple. A thin layer of coagulated serum may be seen on the surface of the nipple. The discharge is always small in amount.

In the later stages of this complaint the pain disappears and cysts are present in varying number. Massage, rather severe in its application, may induce a thick white discharge from the nipples and constantly from the same duct orifices.

* The term "proemial breast" is employed to indicate a condition of the breast which makes it a prelude to later developments of simple papillomata and malignant papillomata and other forms of cancer. It is regarded as more accurate than the terms "precancerous," "precursory," etc., which might otherwise be employed.

The fluid contains desquamated epithelial cells. It is necessary to caution surgeons not to massage the breast to elicit this information, since it must be borne in mind that it is possible that a breast diagnosed as being in the proemial state may contain a small undiagnosable cancer, and there would be risk of disseminating cancer cells under these circumstances.

Pathology.

In the early stages there is to be observed a more or less diffuse desquamative hyperplasia of the epithelium in one duct, or two or more ducts, and also in some of the acini which are in direct connexion with them. The desquamative hyperplasia is most obvious in the smaller ducts (see Fig. 1) and acini. Ducts may be affected alone and acini may also show epithelial activity where none exists in the corresponding duct. The consequence of an abnormal collection of their contents leads to distension of the ducts and acini and accounts for the immediate results of this process —namely, the formation of cysts and stagnation of their contents (see Fig. 2).* Small cysts in the process of formation contain the active desquamative hyperplasia of epithelium. The large cysts are lined by a degenerated atrophied epithelium which at parts has been shed.

The connective tissue around the affected glandular elements undergoes progressive secondary change and the connective tissue cells in parts begin to multiply (see Fig. 1). Also small accumulations of lymphocytes may occur at isolated and infrequent intervals, and can be seen immediately outside some parts of the ducts and acini. In the later stages these accumulations may be more pronounced and occupy longer tracts of ducts (see Fig. 2). I repeat my belief that the proemial breasts act as menaces by being preludes to and by encouraging grave changes within them, and this contention receives support from the fact that in what I estimated and diagnosed as being only proemial breasts I also found intracystic growths of simple papillomata, of malignant papillomata, and other forms of early cancer.

Treatment.

By making particular allusion to multiple small nodules occurring in normal breasts I have at once excluded many glands that hitherto have led to misconception in many minds, and it should not lead to the assumption that both glands are in the proemial state in the same individual, although it may be so.

From what I have said concerning the proemial breast it must be concluded that I regard it with supreme importance and distrust. In saying this I do not suggest that at its best it is certainly doomed to lead to grave pathological changes, but I hold that it is in a condition which is entirely favourable for their later genesis, while, on the other hand, in alarming frequency such changes have unexpectedly been found already to be present. I look upon it and treat it in precisely the same way and for the same reasons that compel surgeons to remove an appendix that has been inflamed. The proemial breast bears exactly the same relationship to cancer and papillomata of the breast as the proemial appendix does to general peritonitis. Cancer of the breast and general peritonitis are just as far beyond surgical control now as they always have been. General peritonitis is prevented by early surgical measures. My endeavour is to bring the preventive treatment of cancer of the breast similarly into line. Preventive surgery in relation to cancer elsewhere has been adopted. Take, for instance, Sir Henry Butlin's and Sir A. Mayo-Robson's work on leucoplakia of the tongue, and the latter's work and that of Sir Berkeley Moynihan on the gall bladder and on gastric ulcer. Consciously and unconsciously surgeons are acting on the same principle when they remove early those prostate glands which are interfering with the normal passage of urine.

My treatment of the proemial breast, in whatever stage it exists, is to remove it in the following way: I make one long curved transverse incision below the nipple, with its convexity downwards. Its length is equal to the limits of the breast; the outer end of the incision is continued into the axilla. Upper and lower flaps of skin are dissected from the limits of the breast and the axilla is opened. The nipple is reflected with the upper flap; it is not removed, care being taken to separate it from the parts immediately beneath it. In so doing it is wise to remove any white fluid that may appear at its base or from the surface from which it has been cut; it might be infective. The breast and fascia over the pectoralis major are dissected away *en bloc*, with the lymphatic glands attached. It is essential that the removed gland should be subjected to a most careful microscopical examination for fear the breast might have passed from the proemial stage to changes of gravest issue. Should the presence of such a disaster be discovered, it is necessary then to remove the skin formerly covering the breast, pectoralis major and minor, and more complete dissection around the higher parts in relation to the axillary vein.

My hope and belief is that in the majority of proemial breasts cancer, at all events, will not be found to be present. If, however, it should be discovered, it will be a great advantage to be thus warned of the necessity of a complete operation at a much earlier date than would otherwise have been possible.

I publish the following reports of four breasts presumed by me to be in the proemial state before operation: and the microscopical appearances I found in three of them, which proved I was wrong in that presumption.

CASE I.

Female, aged 45 years, single. She is waiting for operation.

Left breast: Small gland, nipple not retracted, no discharge from nipple. In an upper and outer segment of breast there is a fluctuating swelling, not adherent to the skin, with defined margins; situated immediately above it and covering its upper margin is a longitudinal scar made at an operation performed elsewhere five years ago for the excision of a cyst. The rest of the gland appears normal. There are no enlarged glands in axilla.

Right breast: Small gland, nipple not retracted, no discharge from nipple. In an upper and outer segment of the breast there is a fluctuating swelling, not adherent to skin, with defined margins. Immediately surrounding it are multiple nodules which can be distinguished as swollen, tender, and painful parts of tortuous ducts. The nodules are irregular in size and larger than normal. There are no enlarged lymphatic glands in axilla.

The left breast probably contains a large cyst and possibly several small ones. The right breast is in a more serious state; the precise condition can only be revealed by careful microscopical examination of whole sections of this breast. I will report later what is discovered on that examination.

CASE II.

Female, aged 43, married, one child 8 years old, which she nursed.

Right breast: Nipple not retracted, no discharge from nipple; the gland is multinodular in all parts, most marked in segments on outer and inner areas of breast. The nodules are of irregular size, larger than normal, and are painful and tender on palpation; menstruation makes no difference to pain. The pain, which has been borne for eight months, has not been improved by rest, hot fomentations, and arm carried in sling. There were no enlarged glands in axilla.

The left breast was normal.

The right breast was removed. Fig. 3 represents the state of affairs discovered upon microscopical examination of large sections made from this breast. D is the situation of the nipple, and E E E is the direction of ducts towards it. A normal duct is to be seen at C C C. A duct, A, contains a large multiradicular papilloma, apparently benign. Another duct, B, contains the beginnings of multiradicular papillomata at three separate parts. In another part of this breast, and having no connexion with parts connected with the distribution of ducts A and B, there existed a small fibro-adenoma.

CASE III.

Female, aged 58 years, married, no children.

Left breast: Nipple not retracted, no discharge from nipple. Multiple fluctuating swellings in breast of various sizes, the largest one inch in diameter. The margins of all were defined. The skin was not attached to them. She had noticed the swellings several months ago. The breast had been painful, but was not painful upon a clinical examination. There were no enlarged lymphatic glands in axilla.

The right breast appeared normal on clinical examination, and no complaints were made of it.

The left breast was removed and whole sections of the breast were cut. Many cysts were discovered of duct and acinous origins, but in a segment of its outer margin was a small cancer in the gland, and which was infiltrating the fat outside it (see Fig. 4). The whole lesion was about the size of a sixpence. In another part of the gland there was a duct containing a multiradicular papilloma.

This patient is considering whether she will take advice and have a more complete operation performed.

CASE IV.

Female, aged 42, married, two children, which she nursed.

Right breast: No retraction of nipple; no discharge from nipple. Contained in an upper and outer segment a large fluctuating swelling. Its surface was not adherent to skin. The breast was nodular throughout; some nodules were painful and irregular in size, and many were distinguishable as parts of tortuous ducts. There were no enlarged glands in axilla.

The left breast appeared normal.

The right breast was removed, and whole sections of the breast were cut for microscopical examination. I found that the

* Further Contributions to the Study of Cysts and Papillomata of the Breast, by Sir Lenthal Cheatle, *The British Journal of Surgery*, vol. ix, No. 34, 1921.

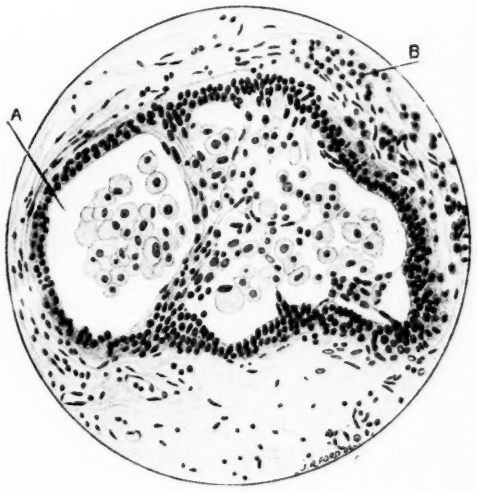

FIG. 1.—Transverse section of small duct. At five or six different parts the epithelial lining is undergoing a desquamative hyperplasia, and by this process the duct is being distended. The connective tissue cells are proliferating at B and at other parts. There are no lymphocytes present in this section.

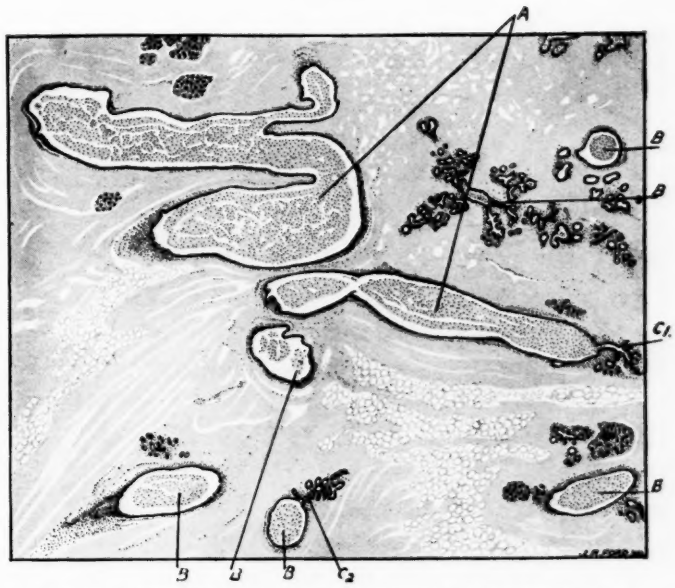

FIG. 2.—Reproduction of a duct, A, towards its termination in branches marked B. The lumens of all are enlarged and full of stagnant desquamated cells. The connective tissue outside them is dense and contains a limited number of lymphocytes, which are in immediate juxtaposition to the outside walls of the duct and its branches. It is interesting and instructive to note that the acini leading into the ducts at C1 and C2 and elsewhere are not in the least distended, a fact that suggests the cause of distension of the ducts is not due to obstruction higher up in their courses. × 30.

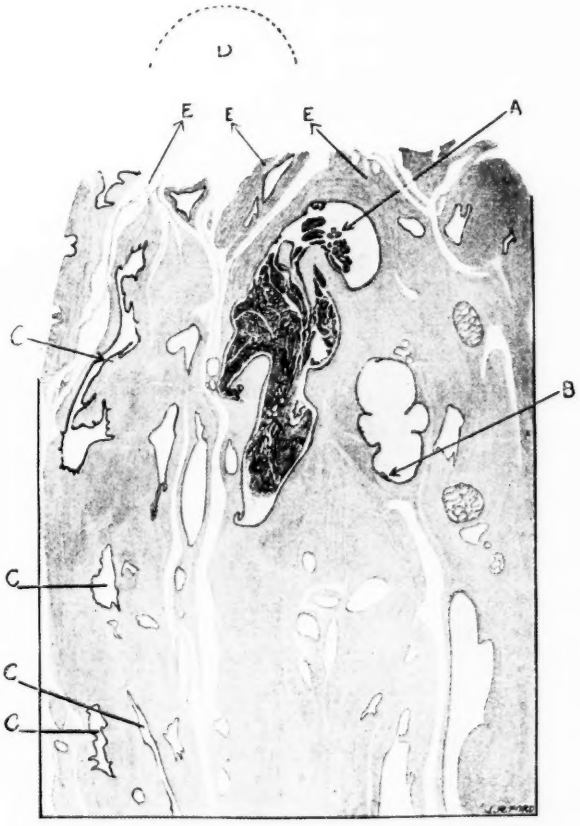

FIG. 3.—Reproduction of part of a breast under the nipple, D. EEE represent the direction of ducts towards nipple. CCCC are parts of the same duct, which is normal. A is a duct which contains a multiradicular and apparently benign papilloma. B is another duct which is dilated, and at three separate parts there are the beginnings of multiradicular papillomata of probably benign nature. The connective tissue is dense, but otherwise there are no other pathological changes. There were no clinical signs whatever of the presence of these tumours. They were discovered microscopically in a breast I believed to be in the proemial state.

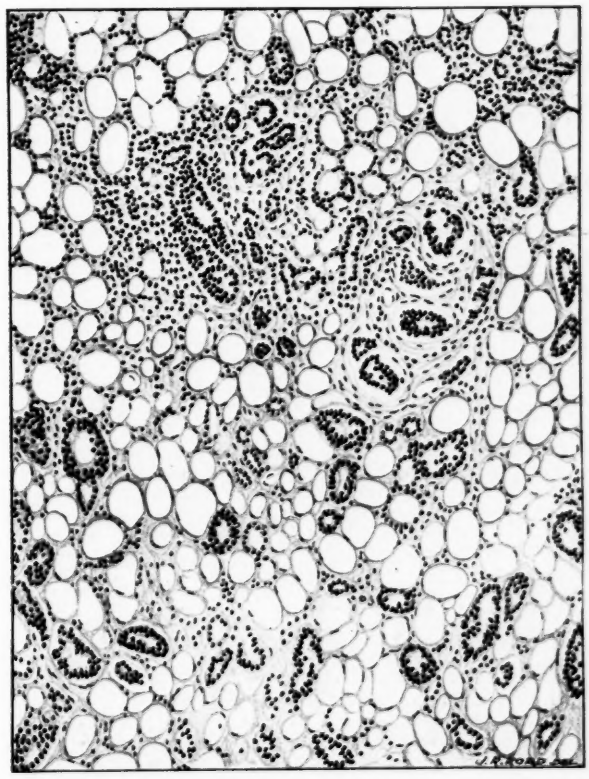

FIG. 4.—A reproduction of cancer which has infiltrated fat, into which it has spread from a small focus, clinically unrecognizable, in the margin of the mammary gland. × 80.

JENNINGS MARSHALL: SUTURE OF RUPTURED LEFT DOME OF DIAPHRAGM.

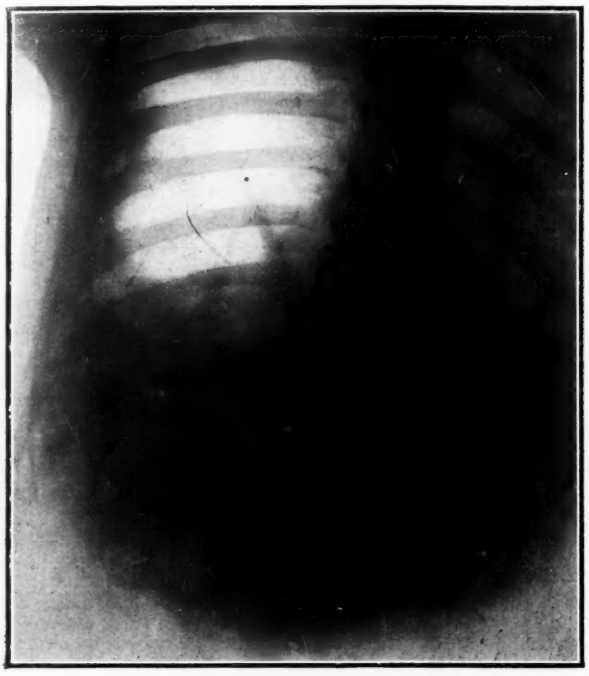

FIG. 1.—Radiogram of chest, showing hernia (on left side), stomach, and transverse colon (without bismuth meal).

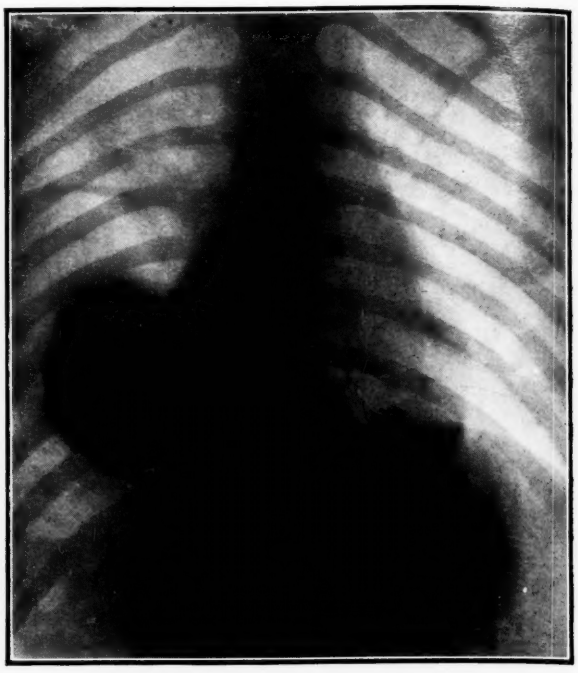

FIG. 2.—Radiogram of chest, showing bismuth meal in stomach (in hernia).

J. M. ACKLAND: ORAL SEPSIS IN RELATION TO GENERAL DISEASE.

FIG. 1.—Normal lower incisors.

FIG. 2.—Pyorrhoea.

FIG. 3.—Apical abscess.

FIG. 4.—Root abscess.

E. A. LINELL: UNUSUAL CAUSE OF DEATH FROM CANCER.

fluctuating swelling contained besides its fluid contents a large papillomatous malignant growth. The epithelial cells lining the papillomatous parts of its structure are columnar.

In the main parts of the tumour the epithelial cells are rigidly confined within what presumably is the cyst wall; but at isolated intervals the epithelial cells can be seen most definitely passing through the wall and invading the surrounding connective tissue. There was a blood clot in this cyst. In other parts of this breast in the neighbourhood of the tumour can be seen ducts the epithelial linings of which are in a marked state of desquamative hyperplasia, very similar to that seen in Fig. 1. Upon the condition of things being discovered by microscopical examination the patient was advised to undergo a complete operation.

The sections have been cut too recently to enable me to get them drawn for reproduction in this article. At a future date I will publish drawings made from them. The sections are at the disposal of all who care to see them.

SUTURE OF RUPTURED LEFT DOME OF DIAPHRAGM.

BY

C. JENNINGS MARSHALL, M.S., M.D., F.R.C.S.,

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With Radiographic Commentary by ROBERT KNOX, M.D.,
Radiologist to the Hospital.

[WITH SPECIAL PLATE.]

A YOUTH of 19 was admitted to hospital for injuries sustained by being thrown from his bicycle. While riding, he was thrown by a skid in front of a motor bus; he fell with the right knee undermost and then lost consciousness for a while. Unfortunately, no further details of the accident were available. At any rate, it was certain the bus passed over no part of his body. I saw the patient after attempts had been made to reduce a supposed dislocation of the knee.

There was severe shock on admission; temperature 97°, pulse rate 120, respirations 20 to 24. The right knee presented a fracture separation of the femoral epiphysis with a longish piece of diaphysis attached on the inner side. The lower end of the diaphysis presented on the outer side of the joint subjacent to the skin, which was whole. This particular displacement of fragments was probably accounted for by the manipulations.

Pain was complained of in the chest at the left costal margin about the eighth and ninth cartilages. There had been no dyspnoea, no sputum, no nausea or vomiting. The pain disappeared at the end of four days, and there was no symptom of trouble at all.

The skin showed no sign of trauma. The left chest moved but little, and was less expanded than the right. Slight cardiac pulsations were seen on the right side of the sternum; the right border of the heart was made out nearly two inches to the right of this; the left border was not determined.

Over the front of the left chest was tympany, extending up to the second rib and out to mid-axilla, where it began to yield to what became at the back slight relative dullness. Auscultation over the tympanitic area showed distant breath sounds at the upper and outer margins, none at the inner and lower part. Elsewhere the chest gave signs of partial collapse of the lung. At the left margin of the sternum there was heard at intervals a loud, intensely metallic clanking, synchronous with the heart beat. After a fortnight borborygmi were heard in the chest; they were infrequent, but had great intensity even as high as the apex of the axilla. Against the possibility of their being transmitted one noted: (1) their maximum intensity was thoracic, (2) their loudness, and (3) apparent origin very near the stethoscope. On a few occasions it was possible, by a sudden dipping of the finger-tips in the epigastrium, to cause a splash to be heard in the thorax. Diaphragmatic hernia was diagnosed on these grounds clinically.

On the fifth day the femur was plated under spinal analgesia. As the lower fragment offered nothing on the outer side but a very short cancellous strip, the incision was made on the inner aspect. Anatomical reposition was effected. Movement of the joint was begun a week later, and the other forms of physiotherapy added as soon as the scar permitted.

The condition of the lower limb had for this time made a proper *x*-ray examination of the chest impossible. The patient was screened in the supine position. The cardiac displacement was evident; the left pleural "cavity" was poorly illuminated compared with the right, and the diaphragm on that side was some one and a half inches lower. Bismuth gruel swallowed by the patient passed rapidly, to lie as a mass 3 inches by 2 inches transversely at the level of the fourth left costal cartilage.

It was thought that operative interference was indicated, though in bed the patient had no symptom, alimentary, respiratory, or cardiac. It is probable, however, that the condition of affairs on exertion might cause considerable embarrassment; further, the possibility of internal strangulation had to be borne in mind.

Intratracheal ether with the patient in the lateral position was given, the table being angled opposite the lower costal margin to "open out" the chest towards the operator. Five inches each of the eighth and ninth ribs were resected in the axilla. The pleura was opened at the upper part of the lower periosteal tube for its whole length. The in-sucking of air was very slight and there was no respiratory disturbance (as, indeed, was to be expected, nearly the maximum mediastinal displacement already being present). The first structure encountered was the omentum at the greater curve of the stomach. This organ, distended to the size of a coco-nut, lay uppermost; below it was the transverse colon, and on the inner side were many coils of small intestine. The left edge of the liver just projected into the pleural cavity. The spleen was not seen.

The rent in the diaphragm began through the oesophageal opening and extended outwards and forwards for three inches, skirting the back of the trefoil. Except at the oesophageal end of the anterior limb of the tear, omentum was adherent to the edges (on the abdominal aspect chiefly). The lesser curve of the stomach appeared only at its middle, while three-fourths of the greater was seen. The cardia and the lower end of the gullet were not displaced or loosened. The gap in the diaphragm was a little over an inch at its widest; the edges were strongly resistant to a greater increase than half an inch in this direction. It seemed that strangulation was a very distinct possibility. The viscera were reduced and retained by a moist pack. At first this seemed almost impossible of accomplishment, but when the head was elevated by adjusting the table, and a supporting sandbag removed from the front of the abdomen, it became a matter of the utmost simplicity. The edges of the rent were freshened, and omental adhesions separated. Four mattress sutures were used to draw the inner edge a quarter of an inch under the outer, whose loose edge was then attached by a close row of interrupted sutures to the upper surface of the inner edge. A widely imbricated line of union was thus secured. There was but little tension to overcome in getting the edges together.

The parietes were then closed, the pressure of intratracheal insufflation being considerably increased. It was observed that the lung inflated rapidly, particularly the lower lobe, whose margin at the completion of the parietal suture extended below the line of incision and actually touched the chest wall.

Convalescence was interrupted only by bronchitis for three days. The absorption of the remaining air was gradual, H.A.B. becoming normal in six weeks.

The patient was seen again eight months afterwards. There were no symptoms of any kind. He indulges in cricket and other sport, cycles and does heavy work. The range of knee movement was 70° to 180°.

To suspect such a condition is usually to diagnose it. Symptoms offered no help, except that the complete absence from the start of dyspnoea seemed rather striking. The mechanical condition was very similar to that in pneumothorax—lung collapse, mediastinal displacement, air in the pleural cavity, albeit enclosed in bowel.

The loudness and superficial character of the rare borborygmi were nearly conclusive. The succussion splash induced by a jerk in the epigastrium may be worthy of note. The fact that the heart does not return to its place is suggestive if one has a case suspected as pneumothorax under observation for some time. A positive bismuth meal result is conclusive, as the stomach must almost inevitably be the viscus first herniated. It is conceivable that a part of the fundus might be so gripped as to prevent the entry of the bismuth. Obviously the supine position is to be adopted. The rare herniation of intestine alone—for example, colon—could be excluded or detected only by frequent examination.

With regard to the operation itself, the whole procedure was emphatically easy. While resection of ribs might have been avoided by a powerful retractor, I doubt whether the access would have been so comfortable. A longer incision would have been needed, and the window into the chest would have had ends not so wide as the middle, which here seemed a helpful feature. One thing is certain: approach from the abdomen would have been far more difficult, reduction would have been more difficult, and a deliberate imbrication of the rent could not have been done. I should like to emphasize the very striking help of posture in effecting reduction. It was noted how tough is the diaphragm—one felt satisfied that no sutures could possibly tear out.

While one did not fear any sudden change of intrathoracic tension, insufflation ether seems to be far the best for this purpose; the anaesthesia given by Dr. Richards was entirely uneventful, and at the end provided the most gratifying feature of the whole procedure—the rapidly expanding lung after its two months' collapse. The upper lobe did not expand anything like as much as the lower, possibly as this received the direct blast from the trachea.

Comments on Radiographic Appearances.

The radiograph, taken on the first visit (September 4th, 1920) to the *x*-ray department, shows an interesting condition on the left side of the thorax. The outline of the diaphragm is irregular and very ill defined. Above it, as high as the second intercostal space, is a translucent area which is limited in the mid-line by the spine and laterally by the ribs and intercostal spaces. Its upper margin is well defined

and apparently composed of pleura which is thickened in that region. Through this clear area the details of the ribs and scapula can be made out; there is very little evidence of detail of the lung. The lower margin is irregular and ill defined, and shows strands of denser tissue with clear areas between. The general appearance is strongly suggestive of air in the pleural cavity. It has not the typical appearance of a large pneumothorax, and is more typical of gas within a distended viscus. The nature of the appearances described was clearly indicated when an opaque meal was given to the patient and a series of radiograms composed. The whole of the meal was seen to be retained on the left side, extending from a sharply defined point at the level of the first lumbar vertebra, and extending upwards to a point at the level of the seventh dorsal vertebra. The opaque shadow, with the gas-distended space above it, occupied about two-thirds of the total thoracic space on the left side. Above the shadow of the opaque material in the viscus was a clear area, and at a still higher level a dome-shaped structure representing the limitations of the above-described air space. This structure most probably consisted of thickened pleura, and formed a limiting membrane for the herniated stomach.

The *x*-ray examination with the opaque food showed clearly that the stomach was situated in the thoracic cavity; the irregularity of the diaphragm and the gas formation seen in the earlier pictures are suggestive of the diagnosis, but no positive opinion could be expressed until the stomach had been filled with the opaque food. It is interesting to note that later negatives showed that limiting structure of the air space was capable of contracting to some extent upon the stomach, and this is shown by the negatives, in which the stomach is seen to contain less of the food than in those of an earlier period.

The radiograms taken on June 28th, 1921, after the patient had been operated upon, show a different appearance from those taken when he was first examined.

The upper surfaces of the diaphragm are practically on the same level. On both sides of the chest the lung detail is well seen; there is no sign of the gas, the heart now occupies a normal position, in strong contrast to the position it assumed in the first pictures, in which it was displaced well over to the right. The lungs show an increase of the root shadows, and there is evidence of enlarged glands at the roots with peribronchial thickening extending into the lung substance.

AN UNUSUAL CAUSE OF DEATH FROM CANCER.

By ERIC A. LINELL, M.D.Manch.,

SURGICAL OFFICER, CHRISTIE HOSPITAL, MANCHESTER; SURGICAL REGISTRAR, ANCOATS HOSPITAL, MANCHESTER.

[*With Special Plate.*]

THE case recorded below seems to me of sufficient interest to warrant publication. The microphotographs printed in the special plate are self-explanatory, but the accompanying diagram will indicate the relations of the low-power view.

History.

E. E., female, aged 43, was admitted to the Christie Hospital, Manchester, on January 11th, 1922, suffering from an inoperable carcinoma of the larynx, which had required tracheotomy at the Manchester Royal Infirmary twelve days previously, to relieve urgent symptoms. She was comfortable until early in the morning of January 24th, when she awoke with severe pain over the precordium. At 1 p.m. she suddenly became very much worse, and was reported as almost pulseless. After the administration of camphor, ether and brandy hypodermically, and of mustard leaves over the precordium she was somewhat relieved.

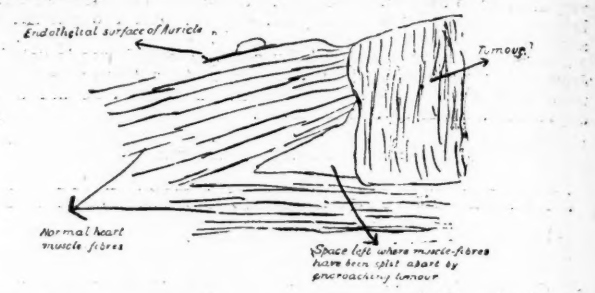
Examination.

The patient was very pale and obviously dying. The pulse was almost impalpable and the heart sounds were very weak, but there was no dilatation of the organ and no bruits could be heard. There were moist sounds at the base of the left lung. These were the only *ante-mortem* findings of note except for slight sepsis round the tracheotomy tube. The diagnosis seemed to lie between cardiac embolus and an acute mediastinitis. The patient died at 2 a.m. the next day, January 25th.

Post-mortem Examination (3.30 p.m., January 25th, 1922).

The tissues around the tracheotomy wound were infiltrated with the primary carcinomatous growth. On opening the chest there was found a left-sided pleurisy with a small amount of fluid and some collapse of the lung. An abscess of this lung was seen to have burst into the pleural cavity. Nodular secondary growths were found on the pericardium and the left pleura, and there were deposits in the bronchial glands.

The heart was of normal size, firmer than normal, and on opening the cavities *ante-mortem* clot was found in all but the left ventricle. The clot was particularly firm in the right auricle, and on removing it a papillomatous mass the size of a pea was found projecting into the cavity from the smooth endothelial wall. There was no indication of this mass on the outer aspect of the auricle, and it seemed to be arising immediately under the endocardium.


Endothelial surface of Auricle
Tumour
Normal heart muscle fibres
Space left where muscle-fibres have been split apart by encroaching tumour

Histological examination of this growth shows the typical structure of squamous-celled carcinoma (see high power microphotograph). From the facts that it is infiltrating the subendothelial heart muscle and is separating the muscle fibres (as seen in the low-power microphotograph) it would appear that the embolus had arrived via the blood or lymphatic system, and that it was not an implant on the auricular endothelium from embolism down the superior vena cava.

The position of the tumour is of interest, and by promoting thrombosis in this cavity it accounts, in my opinion, for the fatal termination of the disease within twenty-four hours of the onset of acute symptoms.

My thanks are due to Dr. Charles Powell White for his histological investigation of the case and for allowing me to prepare the microphotographs from one of his sections.

SOME NOTES ON ORAL SEPSIS IN ITS RELATION TO GENERAL DISEASE.*

BY

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[*With Special Plate.*]

SINCE the year 1900, when Dr. William Hunter first wrote in regard to oral sepsis and its connexion more particularly with anaemia, increasing attention has been given to it as a factor in many other diseases. Sir Thomas Barlow at that time made reference to its importance. The practical result was the recognition of oral sepsis as the greatest septic infection in medicine, and oral antisepsis as one of the most important, simplest, and easiest means for the prevention of groups of maladies affecting almost every system of the body.

It has been said that the alveolar process—with the exception of the intestines—is the largest and the most frequently diseased part of the body from which toxins are liable to be absorbed. A very small amount of toxin absorbed from the alveolar process will do more harm than a large amount absorbed from the intestinal tract, as the toxins are carried direct into the circulation, and not—as in the latter case—through the portal vein into the liver.

Oral sepsis is a comprehensive term, and includes pyorrhoea, alveolar abscess, and the pathological conditions existing at the root of a dead tooth. With regard to pyorrhoea we have to remember that it could not occur without streptococci and staphylococci. It is the penetrating activity of the streptococcus which creates the bleeding lesion, thus opening the way for the staphylococcus, which dissolves the tissue and creates the pocket. Probably the most common of the ill effects of oral sepsis is a state of malaise, in which the patient complains of tiredness, slackness, lassitude, and a general though indefinite feeling of unfitness. We may get functional cardiac effects, such as palpitation, or a state of nervous debility and depression.

Oral Sepsis and Disorders of the Heart.

In speaking of its effect upon the heart, in addition to the functional disturbances associated with indefinite malaise

* Read at a meeting of the South-Western Branch of the British Medical Association

due to oral sepsis, the difficulty may be to decide how much of the lassitude is due to a relative degree of cardiac inadequacy, or whether both things are not due to septic absorption. In some of these cases the palpitation is most distressing, partaking more of a true tachycardia.

Ulcerative endocarditis, both acute and chronic, has been traced to this disease, and in many cases has been known to follow the extraction of septic teeth, where local anaesthetics have unfortunately been used. And here, perhaps, I may be allowed to sound a note of warning, especially in those cases where the symptoms are acute, against many extractions at a time. We have to remember that each extraction gives a greatly increased surface for absorption of toxins, and it is well to allow these cavities to at any rate partially heal before further extractions are attempted. It is a good plan to pass a probe into the sockets for the first few days, and syringe well with warmed antiseptics, using a syringe with a bent nozzle, and getting the cavities well cleared out, especially in the lower jaw, where the drainage is bad. In addition, the patient should rinse several times a day, especially after every meal. For this purpose I have found peroxide very useful.

This treatment cannot be too rigorously followed. In a recent *Journal of the American Medical Association* several cases are cited in which an organic affection of the heart was made worse by extractions of teeth, due entirely to lack of drainage in the affected area, the tooth socket being filled with a firm clot of blood and septic absorption following. The reckless use of vaccines, whilst neglecting this elementary principle of drainage, is greatly to be deprecated.

Oral Sepsis a Cause of Neuritis, Chronic Rheumatism, and Arthritis.

Probably the most common of all the groups of diseases arising from oral sepsis is that of neuritis, chronic rheumatism, and arthritis, and the attacks of acute gout in predisposed patients is certainly influenced by this disease.

Dr. Beddard, in the *Transactions* of the Medical Society of London, places no less than 90 per cent. of the cases of so-called rheumatoid arthritis in this category, and in this he is supported by Sir William Willcox. In many cases the lesions in the mouth are apparent at once, but in many others it is not so, and the cause of arthritis and allied conditions is often deeply seated near the apex of the tooth, with no local symptoms of pain, swelling, or tenderness, and here the *x* rays come to our aid. Photographs—kindly done for me by Mr. Muir, radiologist at the Royal Devon and Exeter Hospital, reproduced to illustrate this paper—show the osteitis and destruction of alveolus; also a clear space indicating the presence of an apical abscess. In these spaces will be found pus and granulations infected with pathogenic streptococci, and from them virulent toxins—if not bacteria—are carried into the blood stream. Sir William Willcox quotes a case under his care where an abscess of this kind was the undoubted cause of malignant endocarditis—an identical organism being found in the blood stream and dental abscess.

In cases of arthritis having a dental origin streptococci showing similar bacteriological characters may nearly always be found in the faeces. As Sir Thomas Horder points out, there are certain diseases more often associated with the sepsis connected with dead teeth than with a suppurating periodontitis. These diseases are specially those leading to chronic inflammation of fibrous tissues and serous membranes. Various kinds of so-called rheumatism come into this category, as well as certain cases of neuritis, and especially the more chronic and progressive cases of multiple arthritis that follow oral sepsis. The type of streptococcus found in these cases is not the long-chained *Streptococcus pyogenes*—that is, the streptococcus of acute suppuration—but *Streptococcus salivarius*, a variety of short-chained streptococcus, held up at the very root of the dead tooth and sometimes ensconced in fibrous sacs adherent to the eroded fang; and the pathological process going on at the root of a dead tooth—leading to sclerosis of the tissues here—is precisely similar to that which is taking place in the joint structures, the muscular fasciae, and the sheaths of the nerve trunks. In these cases quite often there is no suppuration at all, and it is a great error to jump to the conclusion that because there is no suppuration there is no infection. We must remember that this micro-organism at the roots of the teeth is in close contact with the blood stream, whereas we may have considerable suppurating surfaces, as in pyorrhoea, where there is a free exit for the toxin—and it is here that the *x* ray proves of such value, though even this is not infallible as an index of pathological conditions. In these cases Sir William Willcox says vaccine treatment is of great value, but strongly insists that it must be accompanied by removal of the causal infection. Affected teeth should be removed, and a vaccine prepared after, guarding against possible contamination. Vaccine treatment is usually required for three months at least, with weekly and later fortnightly doses. Here I would mention one short case of my own.

H. S., male, aged 65, consulted me in July, 1921, with neuritis in his right arm of four months' duration; he had tried electricity, massage, and various drugs without relief, and still carried his arm in a sling. I found four teeth the sockets of which were affected with pyorrhoea and one dead tooth. These were extracted under ether, and his recovery was rapid and complete—so rapid, indeed, that I feared a relapse. I wrote the patient a fortnight since—that is, after nine months—to inquire as to his condition. He replied that he could use his arm almost at once, play golf and tennis daily, and had not had a twinge since.

Oral Sepsis in Phthisis and Anaemia.

Oral sepsis undoubtedly plays an important part in many cases of pulmonary tuberculosis. The effect of the removal of the teeth is to increase for a time the amount of toxins absorbed into the circulation, and this has the effect of decreasing the local resistance of the lung tissue, with the result that the disease becomes worse. In cases, therefore, where the disease is active, the radical treatment of the oral sepsis should be delayed until a quiescent stage and then carried out very gradually.

Again, we have the relationship between chronic lymphadenitis and oral sepsis, and the possibility of serious general infection breaking through the lymphatic barriers, already lowered in resisting power by the repeated attacks of the commoner products of oral bacteria.

The next disease I would touch upon is anaemia and its association with oral sepsis. Dr. William Hunter, in a paper published recently, says that two forms of severe anaemia are to be recognized: the one the great haemolytic disease, idiopathic or pernicious anaemia; the other a non-haemolytic or septic anaemia, and the cause in no less than nine-tenths of cases is oral sepsis—pyorrhoea. In other cases it is overlooked sepsis in the antrum and nasal sinuses, but the pathology of the two kinds is different in that the septic anaemia is non-haemolytic and owes its character to deficient blood formation, just as the haemolytic or pernicious or glossitic anaemia owes its character to excessive blood destruction. This septic anaemia may exist alone, but it far more frequently complicates other anaemias in which similar conditions of oral sepsis are present; and herein lies part of the great importance of oral sepsis in the disease called pernicious anaemia, but which Dr. Hunter prefers to call "glossitic," sore tongue being one of its earliest and chief diagnostic features, and in this way we get rid of an ill-omened prognostic name. Gastro-intestinal disorders are not infrequently due to septic conditions in the mouth; these are associated with inability—from the defective and painful condition of the teeth—to masticate properly, and are the cause of loss of weight in patients suffering from these conditions. Here I may mention two cases, the first a typical one:

S. R., male, aged 30, thin, emaciated, pasty appearance, complained of a general feeling of malaise and unfitness, with considerable loss of weight; his mouth was full of septic stumps and pyorrhoea. On my advice he came into a nursing home, and there, under a general anaesthetic—a few teeth at a time—I gradually cleared his mouth. There was a marked improvement after each operation: the patient's colour improved, he began to put on weight, without teeth at all, and, as he said, he felt a different man.

The other case is that of a patient in North Devon. B. E., male, aged 40, in the last stage of phthisis, suddenly began to bring up all his food; he could retain nothing; all treatment seemed to be of no avail. I was asked to go and see him, and found a mouth full of pyorrhoea, some teeth extremely loose, and their sockets oozing with septic matter. After much consideration, for the patient was in a very weak condition, it was decided to advise extraction of five of the very loose teeth. The position was explained to the relatives, who gave their consent. The next morning I went down again, accompanied by Mr. Henry Andrew as anaesthetist, removed the loose teeth, syringed the sockets, and cleansed the mouth with peroxide. From that day everything was kept down, and although the patient only lived some six or eight weeks, I think it would probably have been a matter of a very short time if his mouth had not been dealt with.

Both these cases were officers invalided home from Mesopotamia, and I think I am right in saying they had suffered from trench fever.

Influence on Traumatic Lesions.

The influence of oral sepsis on traumatic lesions must not be forgotten. As an example, a young man injures his knee at football. The mischief does not yield to treatment, and a chronic synovitis is established. Removal of dental sepsis is followed by complete recovery.

Oral sepsis may penetrate the orifices of the parotid and submaxillary glands, and set up a chronic inflammation in the ducts and substance of the glands. Acute septic infection, which used to be common in the parotid and was often fatal, has become rare, because one of the duties of the nurse attending exhausted medical and surgical patients is to keep the mouth as clean as possible. There are other and fortunately rare cases due to pyorrhoea. One was reported in the *Lancet* a short time since. The patient had a perfect cesspool in the upper jaw from pyorrhoea, ulceration of adjacent cheek, a spreading cellulitis, which led the way to the cavernous sinus; the left crus cerebri was involved, with a corresponding right-sided hemiplegia. Death ensued in twelve hours from profound septicaemic coma six days after the onset of symptoms.

No patient who has been under treatment for Vincent's angina should be discharged as cured until swabs from around the teeth are negative and free from the fusiform bacillus regarded as the cause of Vincent's angina.

Chronic nasopharyngitis, septic bronchitis, skin troubles, middle-ear disease, are some of the other diseases which may be due to or influenced by oral sepsis.

Oral Sepsis in Children.

I am sure we all recognize the serious effect of oral sepsis in children. Their physical and often their mental growth is retarded. A common result in children is gastro-intestinal disorder, as evidenced by gastric and abdominal pain, diarrhoea of an offensive character, with much undigested food in the motions, sleeplessness, loss of appetite, marked wasting, and pallor. Many of the septic teeth are tender, with the result that we get imperfect mastication, and this, combined with the sepsis, produces the trouble. Night sweats are often present; tuberculosis is suspected, slight albuminuria may be found, and nephritis sometimes intervenes.

Dr. Still lays particular stress on oral sepsis due to dental disease, which he says is so common in children, and enlarged glands in the neck are also common; but it must be remembered that pharyngeal conditions, adenoid hypertrophy, and tonsillar enlargement have much to answer for. Tubercle bacilli have been demonstrated in diseased teeth; but even if it could be proved that these never make their way directly from a diseased or septic tooth it would still be almost certain that this disease in children is indirectly responsible in no small number of cases for the tuberculous infection of glands. Indeed, in the child of tuberculous family it is a powerful predisposing cause of tuberculous infection perhaps down the whole cervical chain.

The failure of an infant to gain weight is frequently associated with oral sepsis in a nursing mother, and the removal of the septic teeth has been followed by a rapid improvement in the weight of the child. Many of the children vomit the milk after being fed. This points to its containing some toxin which the gastric mucosa will not tolerate.

An interesting case—quoted recently—is that of a child suffering from diarrhoea which failed to yield to treatment. The mother was found to have a very septic mouth, and as she persisted in kissing the child they were separated for a while, the result being that the intestinal trouble cleared up forthwith.

Even from this brief survey it is clear that oral sepsis may affect the organism in different ways—indeed, may influence the course of most diseases; and Dr. Stanley Colyer sums up the position thus:

"The somewhat bizarre nature of the effects that have been attributed to dental sepsis may at first sight make the relationship appear improbable, but when once the principles that underlie the subject have been grasped it will be realized that the conclusions are a necessary outcome. In all diseases there are two factors at least—the seed and the soil—without which disease cannot exist. The seed varies, the soil varies; never are the two the same, never is the relation repeated. This is why variation in disease is common, and in no two persons does it run a precisely similar course. Dental sepsis is but a comprehensive term to include various septic conditions in the mouth—it is not a disease. The germs causing the sepsis vary, and so the germs passing into the body and the toxin absorbed produce different results in different people. It cannot be said why germs of a particular kind entering one body produce a septicaemia and in another an infective endocarditis, or why a toxin in one will produce an anaemia and in another a neuritis; but that such is the case seems almost certain, and for the time being we must rest content with the fact."

The tendency in medicine in the present day seems to be to divide disease into two classes—those due to germ infection, and those not due to this cause; and if, in any case coming within one category, we inquire whether there is a source of infection and test the results of treatment directed to its removal, we may arrive at a conclusion of practical value.

We cannot expect to cure all our cases, even by the most drastic treatment, but we must not argue from the particular to the general in cases of failure. There may be other foci of infection: an intestinal tract may be permanently infected, or, as in some of the most chronic cases, the damage may be beyond repair. Time will not permit of my saying more on this far-reaching subject. If I have succeeded in a very small way in calling attention to its importance my end is attained.

Since the foregoing notes were written an article has appeared in the *Lancet* (April 1st) which, while giving oral sepsis its due in playing an undoubtedly important part in the causation of general disease, points out the great need there is for more conclusive pathological proof than is often forthcoming in support of the clinical evidence available.

As giving some account of the extreme divergence of opinions naturally springing from the present state of insufficient pathological authority on this subject, and at the same time presenting a dispassionate view of the extreme schools of thought, this article is most interesting and suggestive. Professor Martin Fisher of America—a well-known writer on infections of the mouth—puts forward dental infection as a cause of very many conditions; whereas Professor Hugo Schottmüller of Hamburg, whilst conceding that oral sepsis, like infection elsewhere, is capable of affecting the general health, does not believe that it acts as a direct cause of general disease. As the writer goes on to point out, dental infections may often be so situated that there is no large outpouring of bacteria into the circulation, yet there is a possibility of small doses of bacteria escaping from time to time and altering the bodily resistance. It is quite certain that no one is in a position to deny that oral sepsis constitutes a potentially and often an actually dangerous condition, and anyone with experience amongst hospital patients especially cannot fail to be struck by the appalling prevalence of oral sepsis. The result of treatment is in very many cases followed by a cure of some other trouble or disease due to it. Whilst every case must benefit generally from its treatment, the great thing to which we should direct our energies is to make pathological proof more convincing. When this has been achieved I am sanguine enough to believe that very great and more certain results will follow the judicious treatment of oral sepsis.

THE SOLUBILITY OF QUININE HYDROCHLORIDE.

BY

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(Department of Pharmacology, University of Edinburgh).

THE quinine salt most generally used formerly was the sulphate, but more recently the hydrochloride has come into favour as being much more soluble in water. The sulphate is taken up only by 725 parts of water, while the hydrochloride is dissolved by 35 parts. Each is readily dissolved with acid, the bisulphate in 9 parts and the acid hydrochloride in 0.6 part of water. The presence of excess of acid is a disadvantage in intramuscular or intravenous injection, and here especially the solubility of the neutral hydrochloride weighs heavily in its favour. In the intravenous injection especially the hydrochloride is likely to be injected, not in distilled water but in saline solution or in Ringer's solution, and it is therefore of importance to ascertain whether its solubility is affected by the constituents of these fluids. The saline solution used was 0.85 per cent. NaCl. The Ringer's solution was made up to contain NaCl 0.85 per cent., KCl 0.03 per cent., $CaCl_2$ 0.02 per cent., and $NaHCO_3$ 0.02 per cent.

Distilled water dissolved	1	part	neutral hydrochloride	in	35	parts
Saline solution	"	"	"	"	100	"
Ringer's solution	"	"	"	"	110	"

The lessened solubility in the presence of NaCl is, of course, only an example of the law, well known in physical

chemistry, that two salts with a common ion lessen each other's solubility, but I had not appreciated that this would hold for the low concentration of NaCl in these solutions. The still lower solubility in Ringer's solution is due to its slight alkalinity, which may lead to the precipitation of the bases, and also to the fact that it contains a slightly greater number of chloride ions.

It was found that on making up the solution with saline which had been kept for a month the solubility was the same as with fresh saline, but that with Ringer's solution the solubility became less in proportion to the age of the Ringer's solution—that is, with Ringer's solution which had been standing for a month and a half, the solubility was 1 in 135. Also if the solution of quinine hydrochloride in Ringer's solution is allowed to stand for one week it is found that quinine is precipitated, only 1 part in 125 remaining dissolved.

These results show that it is advisable to use freshly prepared solutions for intravenous injection. By heat quinine hydrochloride can be dissolved in saline or Ringer's solution to the same extent as in distilled water, but there is a tendency for adeposit of crystals to take place in the needle as the solution becomes cooled during injection.

Relative Acidity of Acid Quinine Hydrochloride and Quinine and Urea Hydrochloride.

The hydrochloride of quinine and urea has been introduced of late years and may be regarded as a substitute for the acid hydrochloride. As regards solubility, each is soluble in less than its own weight of water. It is of importance to find whether quinine and urea hydrochloride differs from the acid hydrochloride in acidity. I have made up solutions containing the same amount of quinine per cent.; 1.33 per cent. solution of quinine and urea hydrochloride contains the same amount of quinine as a 1 per cent. solution of acid hydrochloride. On titrating these solutions with N/10 NaOH, using phenol red as indicator, I found that

5 c.cm. quinine and urea hydrochloride solution = 1.4 c.cm. N/10 NaOH.
5 c.cm. acid quinine hydrochloride solution = 1.3 c.cm. N/10 NaOH.

The P_H of these solutions was then tested, using standard P_H solutions with methyl orange as indicator. It was found that P_H of quinine and urea hydrochloride was 3.5 and the P_H of acid quinine hydrochloride was 3.7.

It is seen that the acidity of these two drugs, both as shown by the hydrogen ion concentration and the titrable acidity, is practically the same. Thus quinine and urea hydrochloride appears to possess no advantage over acid quinine hydrochloride.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

FUNCTIONAL AMBLYOPIA.

DURING the last two years I have had under my observation ten scholars with defective vision in whom there was no error of refraction and no discoverable disease to account for the bad vision. The children, when in school, were found to have defective vision and in consequence were sent for treatment.

The sexes were equally divided. Their ages ranged from 9 to 13 years, and their visual acuity, as tested with Snellen's distant types, from 6/18 to 3/60. Both eyes were alike, or nearly so. The refractive conditions, estimated under atropine, showed practically no error, or only slight degrees of hypermetropia or astigmatism. The media and fundi were normal. On placing a -2 D. sph. over an eye the vision was usually made worse, but on adding to this a $+2$ D. sph., the one lens neutralizing the other, the child immediately read right down to 6/9 or 6/6. This manœuvre was equally successful in all the cases.

These striking results were due to suggestion, or to withdrawal of psychic inhibition. In one case the fields of vision were tested with a small white object and were found to be contracted down to about 20 degrees. Some could read the test types for near vision, at least for a short time, while their distant vision was very imperfect. All were encouraged to believe that they could read the distant types, and most of them did so ultimately, in a slow, hesitating manner. Swanzy wrote of the "fluctuating vision" in these cases, a condition that we often observe.

All these children were dull and listless, some ready to weep, and others decidedly anaemic. Probably these conditions of lowered vitality were partly due to the present industrial depression with consequent unemployment and underfeeding.

Some years ago I reported[1] the case of a girl who recovered her sight after having been for two years in an institution for the blind; her eyes presented no evidence of disease.

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RUPTURE OF VARICOSE VEINS MIMICKING ACCIDENTAL HAEMORRHAGE.

A PRIMIPARA, hourly expecting her confinement, on getting up into bed bled profusely. A midwife was summoned and she sent for me. I found the patient perturbed but otherwise looking well. The bleeding had stopped and her pulse was slow. I was told that there were no pains and no signs per vaginam of dilatation of the cervix and no boggy feeling through the fornices.

The possibility of accidental haemorrhage was entertained and a sedative was given. Two days later labour came on and the first stage was without any haemorrhagic abnormality—thus ruling out placenta praevia. The second stage was delayed, so I put on forceps. The case being primiparous I was surprised to find the anterior vaginal wall bulging down in front of the advancing head. I pushed back this protrusion, and as I did so—gently—I felt my finger perforate the tissues, and I wondered why the anterior vaginal wall should be so fragile. When the head was born there was a gush of blood from the vagina, so I promptly delivered the shoulders; luckily the child was small. There was no tear of the perineum. The blood now poured from the vagina, so I pressed the soft tissues against the symphysis, with happy results, for there was no more bleeding.

Inquiry next day elicited the history of the patient, during her pregnancy, having been examined by a doctor, who told her she had varicose veins on the front wall of her front passage, and that trouble during her confinement might result. She moved out of this doctor's area and forgot to mention to me what she had been told. This varicosity had not been seen by myself or the midwife, as we had only inspected the parts when the patient was recumbent, and she had not thought it worth while to mention this varicosity.

Had the patient presented the signs and symptoms of severe loss of blood when I saw her first I might have packed her vagina as recommended for accidental haemorrhage by the late Dr. Berry Hart in his book, *Guide to Midwifery*, 1912: "This treatment applies to cases where the cervix is undilated and the uterus not acting" (p. 514).

The above case is a good example of the disadvantage to doctor and to patient of the usual plan of the doctor being booked and then not seeing his patient till the child is born or some complication arises.

Dr. Berry Hart in his book says: "*Of course* the medical attendant should have seen his patient on several occasions before" being called to her in labour; but how many prospective fathers are prepared to meet this expense?

Kilnhurst, nr. Rotherham. CHARLES J. HILL AITKEN, M.D.

KNOT IN UMBILICAL CORD AS A CAUSE OF ACCIDENTAL HAEMORRHAGE.

THE following case may be rare enough to warrant publication:

Mrs. S., aged 24, second pregnancy, noticed haemorrhage at 6.30 a.m. on May 7th. She did not expect her confinement for another two weeks. When I saw her at 10.30 a.m. she was considerably collapsed, and still having continuous, though not severe, haemorrhage. The uterus was not unduly large and the os admitted two fingers, and was patulous. It was a vertex presentation, and there was no sign of placenta praevia. There were no "pains," and no foetal heart sounds were audible.

An enema, followed by rectal saline, decreased the haemorrhage but failed to produce uterine contractions, as also did 1/2 c.cm. of pituitrin. As at 2.30 p.m. there were still no contractions, I packed the vagina tightly, and this produced the desired effect, as the child was born (dead) at 5.30 p.m. A large clot of blood followed, and immediately afterwards the placenta. The cord, which was longer than average, had a single complete knot in it, and the foetal circulation had apparently become completely shut off, causing separation of the placenta and haemorrhage before labour set in.

The patient had complained of great foetal activity for some days previously.

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[1] *Glasgow Medical Journal*, April, 1917.

Reports of Societies.

NOTIFICATION OF TUBERCULOSIS.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, held on May 26th, with the President, Dr. A. K. CHALMERS, in the chair, Dr. REGINALD DUDFIELD read a paper on "Reforms needed in the notification of tuberculosis."

Dr. Dudfield began by remarking that the primary object of notification was to secure that all tuberculous patients should have the advantage of treatment under the scheme. A second, and by no means unimportant, aim was the collection of statistical data. Without reliable data as to the prevalence of the disease it was impossible either to make adequate provision for treatment or to judge the results either of treatment or methods of prevention. At present notification was incomplete. During the eight years 1914–21 1,439 deaths from all forms of tuberculosis occurred in Paddington. Of these 298 represented cases only made known to the speaker by the registration of death, while in 106 instances notification was made after death—that is, in 404, 28 per cent., of all cases ending fatally, the first information of the presence of the disease was the death certificate. Turning to notifications, of 3,723 cases notified during 1914–21, 106 referred to persons already dead and 247 to persons dying within a month of notification, so that 353, 9.8 per cent., could not be dealt with under the tuberculosis scheme. The full significance of deaths occurring within a short time of notification could only be known were the normal duration of a case of tuberculosis known. The speaker held that most cases of pulmonary tuberculosis in the adult were reactivations of infections acquired in infancy or youth and that accordingly some proportion of deaths occurring shortly after notification must be inevitable. Dr. Dudfield referred to the work of Wurtzen of Copenhagen on the average duration of pulmonary tuberculosis reckoned from the onset of symptoms. The averages (in months) varied from 19.5 in the age group 15–20 to 45.8 at ages over 45 in males, and from 21.2 to 47.4 in females. Dr. Dudfield then considered the distribution of fatal cases not notified to him.

Deaths Occurring in Paddington.—These numbered 143 from all forms of tuberculosis during the eight years considered; 87 of these were under the care of practitioners.

Deaths Occurring outside Paddington.—There were 155 such deaths, a large majority in institutions. Of 92 deaths from pulmonary tuberculosis in institutions, 60 occurred in lunatic asylums. Dr. Dudfield found that the practice of the medical staff of institutions as to notification was not uniform; some did not notify, others refrained from doing so at the request of the medical officers of health of the districts in which the institutions were situated, others notified systematically to the local medical officers of health, but the certificates were not transferred to Dr. Dudfield. It was to be remarked that the late Local Government Board had informed the superintendent of one of the large asylums that "where . . . a patient has been for a long time an inmate of an asylum the Board are advised that the asylum should be regarded as the usual place of residence" of the patient for the purpose of the regulations. The result was that while the death when it occurred was allocated by the Registrar-General to the area whence the deceased was admitted to the asylum, no transfer of the notification certificate to the medical officer of health of the district of origin was made.

Of 106 notifications received after the death of the patient —62 with respect to cases of pulmonary and 44 with respect to other forms of tuberculosis—54.8 per cent. of the former and 75 per cent. of the latter were deaths in institutions. Of 247 cases wherein death occurred within a month of notification, 68.4 per cent. were in institutions.

Dr. Dudfield presented tabulations of the distribution by age and sex of cases notified 0–1, 1–3, 3–6, and six or more months before death. The conclusion reached was that cases fatal within six months of notification were not a random sample. Without laying too much stress upon the matter, he was inclined to think that patients whose cases terminated fatally within six months of notification were, on the whole, younger than those who survived six months.

Dr. Dudfield, having pointed out that in 1919–21 the percentage of fatal cases only heard of at death was greater than in 1914–18, passed to a consideration of the changes of incidence and fatality, using index numbers in terms of the records of 1914 as a base. He thought the figures afforded some evidence that work under the scheme had been useful, but, in his opinion, the administrative side of the scheme should be tightened up, and to that end notification should be improved. Article V of the existing regulations ran:

> Subject to the provisions of the Regulations every Medical Practitioner (unless acting as a School Medical Inspector) attending on or called in to visit any person (whether at an institution or otherwise) shall, within forty-eight hours after first becoming aware that such person is suffering from tuberculosis, make and sign a notification of the case in Form A, and shall transmit the notification to the Medical Officer of Health for the District within which the place of residence is situated at the date of notification;
>
> Provided that a Medical Practitioner shall not notify a case of Tuberculosis under this Article if he has reasonable grounds for believing that the case has already been notified . . . to the Medical Officer of Health for the district within which the place of residence of the person is situate;
>
> Provided further that if a notification is required in pursuance of this Article in respect of an in-patient at an Institution the notification shall be sent to the Medical Officer of Health for the District in which the usual place of residence of the patient is situate.

Dr. Dudfield thought that the first of the two provisos should be repealed, and an addition made to the first paragraph requiring the medical practitioner to repeat his notification should the patient move into a new district and the practitioner continue in attendance. Regarding the second proviso, Dr. Dudfield thought that the certificate of notification should be sent to the medical officer of health of the district in which the institution was situated. Dr. Dudfield also thought that "suspect" cases should be notified, the more so as institutional treatment was now available for "suspect" cases for observation.

With regard to Article VII, providing for notification by medical officers of Poor Law institutions or sanatoriums of cases admitted and not required to be notified under Article V, and also of discharges other than transfers, Dr. Dudfield thought the provisions should apply to all institutions and to "suspects." He also thought that when the case was first notified on Form C, the medical officer of the institution should be required to supply the name and address of the practitioner arranging for the admission of the patient, if the medical officer of health desired the information. When a patient was admitted from one district and discharged to another, the medical officers of health of both districts should be notified. As at present drawn the article required the admission to be notified on Form C, even after "transfer," but not the transfer-discharge on Form D, so that there was an incomplete record of institutional treatment and an excess of recorded admissions over discharges and deaths. Dr. Dudfield thought that opportunity of immediate treatment was lost by a refusal of some practitioners to notify until the tubercle bacillus had been demonstrated in the sputum. Lastly, he referred to the difficulty of preparing accurate statistics of prevalence and secular change. The first source of error was the possibility of cases recorded as "primary" in one area being really "secondary" to notifications in another area. The second source of error was due to failure to trace removals. The latter might be dealt with by altering the form of certificate, requiring the practitioner to state that he had made inquiry as to previous notification, or by arranging for the district medical officers to forward to the county medical officer a list of cases where there has been removal to an untraced destination.

COMPARATIVE UROLOGY.

THE programme arranged for the Section of Urology of the Royal Society of Medicine for its meeting on May 25th was one that dealt entirely with the comparative aspect of medicine and pathology. Professor Hobday contributed a paper on "Calculi in animals," and it had been arranged that Mr. Kenneth Walker should follow with a discussion of "The comparative anatomy and the physiology of the accessory sexual glands."

Professor HOBDAY, in opening his paper, expressed his thanks to the Royal Society of Medicine for having asked him to read a paper, and said that veterinary surgeons appreciated the efforts made by the Section of Urology to draw together the kindred sciences of human and animal surgery. He was convinced that much good would result from closer collaboration, for after all the problems with which the veterinary and the human surgeons had to deal

were essentially the same. It was true that a veterinary surgeon worked under certain disadvantages, and possibly also certain advantages. For one thing he had to rely entirely on signs, as his patient could give him no history and make no verbal complaints. At the same time his patient could tell him no lies. Calculi were common in domesticated animals, especially in dogs and horses. The passage of a calculus along the urethra of a dog was complicated by the presence of a bone in the penis. In the case of the bull a similar complication was provided by the fact that the penis was S-shaped. This generally necessitated surgical intervention in the way of urethrotomy. Professor Gardner had analysed a large series of calculi obtained from animals, and had found that the commonest ingredient was calcium carbonate. Oxalate and phosphatic calculi were less common. An interesting point was the legal aspect of calculus. A lawsuit had recently taken place because a veterinary surgeon passed a valuable dog as fit and the dog had to submit to an operation for calculus some three months later. Professor Hobday concluded by showing a series of skiagrams of calculi in dogs and some illustrations of the operative technique of lithotomy in animals.

The President of the Section, Sir THOMAS HORDER, in thanking Professor Hobday for his paper, said that he considered it an admirable step that practitioners in veterinary and human surgery should meet together to discuss their problems, and he hoped that much good would result thereby.

Sir JOHN BLAND-SUTTON said that he felt that perhaps the chief danger of such a paper was that those urologists who had heard it might arrive at the conclusion that they themselves were capable of dealing in future with any complaints from which their own pet animals might suffer. He would deplore such an event, and personally would not entrust his own cat to anybody except Professor Hobday. During his long connexion with the Zoological Gardens he had performed *post-mortem* examinations on some thousands of animals, and it was interesting to know that calculi were of the extremest rarity amongst wild animals. In only two cases had he discovered them—once in a sloth and once in a bear. He had only one question to ask. Professor Hobday had spoken of the commonness of multiple calcium carbonate calculi in dogs. Had the possibility of a parasite providing the nucleus for such calculi been considered?

Sir JOHN THOMSON WALKER said that he felt with Sir John Bland-Sutton that it would be a great help if urologists could keep in touch with veterinary surgeons in order to work out such a problem as the etiology of calculus. The rarity of uric acid and oxalate calculi amongst animals was an interesting fact. He would like to know the state of the urinary tract in those animals in which calculi were discovered. Was obstruction present, and had any peculiarity in feeding an influence on the presence of calculi?

Mr. RALPH THOMPSON could not agree that calcium carbonate calculi were uncommon in man. He also believed that oxalate calculi were not so common as was generally supposed. The legal aspect of calculi interested him, and he suggested that after all a period of three months was sufficient to permit of the formation of a calculus in a dog.

Mr. FRANK KIDD disagreed with Mr. Thompson's remarks about the commonness of calcium carbonate calculi in man, and thought that the results of Professor Gardner's analyses of animal calculi were of considerable interest. He would like to know whether it was customary to close suprapubic wounds or drain them.

Mr. SWIFT JOLY remarked that it had always been a great surprise to him that those animals, such as birds and lizards, who passed urine so thick with uric acid crystals that it was semi-solid, should suffer so little from stone. He would have thought that they would have shown a great tendency to the formation of calculi, but such was not the case. Had Professor Hobday any figures showing the relative commonness of renal calculus amongst cattle and horses? He himself had wondered whether the entirely different construction of the kidneys in these two animals might not influence the formation of calculi.

Professor WOOLDRIDGE, speaking as a veterinary surgeon, expressed his appreciation of the hospitality that the Section of Urology had extended to him. He answered some of the questions that previous speakers had submitted, and said that the question of a parasite providing the nucleus for calculi in dogs had been thoroughly explored. It had, however, been found that dogs, at any rate in this country, suffered very little from urinary parasites, and no trace of such had been found in the centre of calculi.

Professor HOBDAY then replied briefly to the questions put to him by previous speakers. Owing to the lateness of the hour it was decided that Mr. Kenneth Walker's paper on "The comparative anatomy and physiology of the accessory sexual glands" should be postponed until the next meeting of the Section. Many interesting exhibits were on view, Professor Hobday showing a collection of calculi removed from various domestic animals, and Mr. Kenneth Walker specimens of the prostate of the badger, the wombat, and the dog.

LOCALIZATION OF TOXI-INFECTIVE LESIONS IN THE CENTRAL NERVOUS SYSTEM.

AT a meeting of the Manchester Pathological Society on Wednesday, May 10th, with the President, Mr. J. HOWSON RAY, in the chair, Dr. DAVID ORR and Dr. A. CORSAR STURROCK read a paper entitled "The influence of disturbance of the sympathetic mechanism on the localization of toxi-infective lesions in the central nervous system."

They stated that lymphogenous toxi-infections of the central nervous system followed definite nerve root paths and were primarily systemic. Non-systemic lesions such as those of pernicious anaemia, Addison's disease, and cancer cachexia were the result of blood-borne infection, but to call them haematogenous did not adequately explain their distribution. Degenerative changes in the non-systemic lesions or combined scleroses in the cord were found over the surface of the white columns and around the postero-median septum, which parts derived their blood supply from the pia-arachnoid, whilst the grey matter and most of the basis bundles, which were supplied from the anterior spinal artery, escaped. The stress of these lesions fell on those segments of the cord from which white sympathetic rami passed. In the brain the same distribution was found, lesions in a general blood infection being found in parts supplied by pia-arachnoid.

Experimental work was carried out on rabbits. First, a study was made of vascular changes in the brain after division of the cervical sympathetic, and secondly of vascular and nervous elements in the brain in similar animals after flooding the circulation with an emulsion of *B. dysenteriae* Shiga injected into the vein of the auricle. The results might be summarized as follows:

Lesions due to sympathetic division alone. These were vascular dilatation, perivascular oedema, slight proliferation of adventitial cells which might be a response to increased permeability of the vessel wall resulting from sympathetic paresis and the release of certain noxious products from the circulation. There was at the same time some morbid change in nerve cells, and the areas affected were those supplied by pial vessels—namely, the cortex cerebri and the cornu ammonis, the fascia dentata, the amygdaloid and caudate nuclei, which were supplied by folia of pia carrying vessels invaginated from the surface of the brain.

When, after division of the cervical sympathetic, a general intoxication was produced, lesions were found affecting the same areas, but to a much greater degree, and the unilateral sympathetic division intensified the morbid lesion on the same side. The areas involved in both series of experiments were the archaic regions of the brain *plus* the cerebral cortex, which was developed from the archipallium. All were supplied by pial vessels and under sympathetic control. It would appear, therefore, that the sympathetic nervous system played an important part in toxi-infective inflammation and degeneration and its involvement was a contributory factor in the localization of lesions, not only in the central nervous system, but probably wherever they might occur. Further investigation on this point might lead to a better comprehension of the genesis of obscure non-systemic lesions affecting both spinal cord and brain.

While lesions were found in all the areas mentioned above, the most striking and remarkable was extensive periarteritis in the head of the caudate nucleus just external to the anterior horn of the lateral ventricle. This lesion was so well defined and so localized as to seem of special significance in view of the obscurity which at present surrounded the etiology of certain lesions which implicated the lenticular area.

In these experiments on acute intoxications ependymal cells of the lateral and third ventricles and of the iter, as well as the epithelium of the choroid plexus, were in a state of active

secretion. This secretion consisted of small globules of a translucent and highly refractile material, which coalesced into larger masses, consisting of an inner core with a weak affinity for certain stains and an outer marginal zone with a marked affinity. This was an active secretory process of a lipoid material, which was probably of the greatest importance as an active defensive measure against intoxication as well as one destined for the purposes of regeneration and repair.

These lesions, occurring in the archaic part of the brain and intensified by disturbance of the sympathetic mechanism as well as in the superficial layers of the cortex cerebri, might play an important part in the genesis of disturbed emotional states. They were produced through interference with the blood supply without added toxin, but were greatly increased by the additional factor of an experimental intoxication. This fact inclined the authors to take a much broader view of the genesis of emotional disturbance, and tended to take the question out of the purely psychical field of argument. In emotional disturbance the initial stimulus might come from the sensorial cortical areas, the peripheral sensory nerves of the life of relation, or through the endocrino-sympathetic system, which subserved the function of kinaesthesia and was the physiological foundation for those feelings of well or ill being so important in the psychic and physical life of the organism. These kinaesthetic or vegetative stimuli, when normal, remained subconscious, but leapt into prominence so soon as they became abnormal. Every stimulus which impinged on the central nervous system produced results which embraced a vast territory, and whether the exciting stimulus be central or peripheral its influence reverberated throughout the whole nervous system and its appendages, and was certain to find its expression in a reaction on the part of the psychic and vegetative life.

A healthy affective tone played no small part in keeping the higher cortical and intellectual functions up to their highest level, and affective tone and emotion were influenced or often greatly disturbed by morbid changes in the archaic portions of the brain. It was there and in the cerebral cortex that lesions occurred after interference with the cervical sympathetic in the rabbit, and as affective tone and emotion were so closely linked up with the function of the endocrino-sympathetic system their disorder was probably the result of a psycho-physical process which altered the nutrition of the ganglion cells which governed their mechanism. A similar process was no doubt accountable for the large group of functional disturbances termed the "psycho-neuroses." Future researches might ascribe more importance to the effects of altered nutrition of the central nervous system than to the purely psychic element, though one recognized the influence of the one upon the other.

Benign Epithelioma of Skin.

Dr. LOUIS SAVATARD reminded his hearers that rather more than thirty years ago Brooke had first described before this society small tumours of the skin, to which he had given the name of "epithelioma adenoides cysticum," and that Brooke's original paper appeared in the only published *Transactions* of the society (1891-92). Fordyce of New York was at that time carrying out similar research, and communicated his results to the sixteenth annual meeting of the American Dermatological Association in September, 1892. Brooke and Fordyce's clinical and histological observations were almost identical, and to their masterly descriptions there was to-day little to add. Last summer the speaker had by chance come across one of Brooke's original cases, and he showed slides of the condition then and now. He stated that in their multiple variety there was little difficulty in diagnosis, and that the uniformity of the lesions readily differentiated them from multiple rodent ulcers. When solitary lesions presented themselves—and he had had five examples—the clinical diagnosis from a non-pigmented naevus was not possible. When these solitary lesions became ulcerated, as they had in three cases, they simulated early rodent ulcers or early epitheliomas. Some of the lesions showed pigment beneath the epidermis, in the adenoid masses and fibrous stroma. Many of the cases presented other naevi associated with the tumours. The communication was illustrated by numerous lantern slides.

A MEETING of the West Kent Medico-Chirurgical Society was held in the Miller General Hospital, Greenwich, on May 12th. Dr. C. T. T. COMBER, O.B.E., occupied the chair, and delivered his presidential address, in which he gave an account of the early days of his practice on the Yorkshire moors. He described the collection of plants and putting them up to dry in the doctor's surgery. There was much superstition, and he saw a "holy stick" to which was attributed miraculous powers of healing. He described an operation on a countryman on a farm, where the patient held the candle whilst the surgeon amputated the leg. He showed an original stethoscope, wooden pill boxes, an early tonsillotome, and an instrument for extracting teeth with a T-shaped handle. A smoking concert was afterwards enjoyed by a large company of ladies and gentlemen.

Reviews.

A MOORLAND PRACTICE.

THE late Dr. R. W. S. BISHOP's book, entitled *My Moorland Patients*,[1] contains no small store of wisdom entertainingly surrounded by anecdotes of his medical experiences in his Yorkshire practice. The work has been edited by a friend, who also furnishes a biographical note from which we learn that this "Yorkshire Doctor" was born at Ripon, studied at Leeds and London, qualified in 1889, spent some time in Paris (where he gained an easy fluency with the language), returned to England, where he acted as an assistant in Derbyshire, and finally practised for some twelve years at Kirkby Malzeard, on the moors north of Ripon, in or near Richmondshire. He retired from practice and settled in Tanfield on the river Ure; in 1915 he was attacked by a painful disease, from which he ultimately died on December 31st, 1921. His book was written in the intervals of acute suffering, and in its cheery optimism and constant good humour shows well how a brave man faced for himself the King of Terrors, whom he had so often held at bay for others amongst his moorland patients.

Dr. Bishop has in this book done for the people of the north-west part of Yorkshire something of the same kind that Turner did for Richmondshire's hills and valleys; he has pictured them in all their moods, and has shown them in storm and sunshine, in the sterner phases of tragedy, and in the lighter aspects of native humour. In one chapter some moorland tragedies are described with graphic pen, and another gives specimens of Yorkshire wit and humour; but all through the thirteen chapters an appreciation of the humorous in life runs cheerily like the moorland beck of the frontispiece. Indeed, one can easily understand that without an eye for such a way of looking at the discomforts (to use no stronger word) of medical practice in the North Riding the moorland doctor's life would be hard beyond bearing. After recounting the many things a man has to give up in these solitudes, Dr. Bishop sums up with a clear note of affection for the moorlands: "It was God's own country . . . the pages of the great book of Nature were always invitingly open, and there were ample opportunities for sport of every kind. The people, on the whole, were most kind and hospitable. Their folk-lore, habits, and language were a source of perpetual interest and study, and, if the conditions were trying, it was a healthy land."

A distinct peculiarity of country practice is early pointed out in the reflection that the patients are, unlike those in the towns, more or less stationary, and that therefore the doctor gets to know their individual character and ways better. One morning Dr. Bishop was rather worried: he had just seen two women living next door to each other; one he could not persuade to go to bed, the other he could not persuade to get out of bed. Individual eccentricities all become accentuated, and curiosity is everywhere rampant. Smoke from an unusual chimney was enough to set tongues wagging. 'Another chimbley smoking at Trotter's this morn." "What's up? Onnyways t' bairn isn't looked for yet awhile. Must be his sister fra Lunnon, or yon painting chap is there ageean." There is a sombre side to things too: the frequent intermarrying of cousins is held to have something to do with the frequency of insanity; excellent teeth, too, are becoming rare.

Dr. Bishop had many exciting experiences. Snowstorms brought him into danger, as on the day when he took a short cut and unknowingly skirted a precipice by a margin of eight inches. The farmer whom he had acquainted with his intention had merely said, "Ye mun tak care, Doctor"; but he had later gone out after him with a stable lantern. He

[1] *My Moorland Patients.* By a Yorkshire Doctor (the late Dr. R. W. S. Bishop). With illustrations. London: John Murray. 1922. (Pp. xi+242. Price 12s. net.)

had adventures with unfriendly dogs and with "saucy" bulls. A medical friend of his was once, after much preparation, on the point of plunging a knife deep into a painful carbuncle when the patient remarked, "If I give mouth t'aud dog'll click ye for sure," pointing to the sheepdog under the table suspiciously watching proceedings. It was not easy to get another doctor to help in operative work, for the relatives were sceptical about the necessity and still more about the speed called for. "It's none a gallopin' matter?" asked a husband, very loath to start; some time afterwards Dr. Bishop found him laboriously shaving, and was told, "I never go to Muxley without shaving; it's none a gallopin' matter, is it?" There were, of course, many obstetric occurrences, and these appear under the euphemism of "waiting for the hatching of a moorland chick." The hospitality following such events was oppressive. In addition to "wetting the baby's head" there was much solid food to be eaten; on one occasion the doctor was to be seen running at top speed with a black bag at 3 o'clock in the morning to escape from fried Yorkshire ham and a pursuing recently made father. Such hospitality must generally be accepted if one is not to be called "'igh, 'aughty, and pompey."

There is an exceedingly interesting chapter on old Yorkshire words, which, especially in connexion with medicine, are not lacking in force and expressiveness. The grave prognosis and the approach of death are deftly described as "making bad mends," "ganning t' wrang rooad," "sweealing away," "tapering off," and "pegging out." After death come the "pinkers," which is the name given to the women who lay out the body; both Dr. Bishop and his editor are puzzled about the derivation of this word, but it may be suggested that as "pinking in of the day" sometimes means the hour of twilight, so the term may have been applied to the women whose duties brought them to the person who had just passed into the night of death.

One might easily go on quoting from this fascinating record of moorland practice; but one more story must suffice. Dr. Bishop once put his thermometer in the armpit of a sick farmer, and went away forgetting to remove it; on his return he expected to find it smashed; he got a welcome, however, from the old man, and the precious instrument quite whole, with the following explanation and comment: "Ah's glad to see thee, I can tell thee, bud what a job I've had wi' yer fanglement. It kept slippin' doon an' I puts it back, an' it slipped ageean, an' I puts it back ageean. By gum I nobbut winked (slept) a bit afore it slipt ageean. I tewed all t' neet wi' it, but it's deean me ner hurt (much good), an' I sall soon be makin' good mends."

INTERNAL SECRETIONS.

PROFESSOR SWALE VINCENT has published a second edition of his book on *Internal Secretion and the Ductless Glands*.[2] The first edition, published in 1912, was exhausted in 1914, and the appearance of the new edition has been delayed in order to allow time to give adequate expression to the changes brought about by the researches of recent years. The author has exerted that rigid criticism and wise scepticism which are required in dealing with a subject which has become the happy hunting ground for intra-professional quackery, and for that exploitation of the practitioner and his patients carried on by the drug makers. The bibliography has been omitted in this edition, because when brought up to date it was very long and because the papers since 1917 are abstracted in *Endocrinology*, and since 1915 in *Physiological Abstracts*. The amount of space given to clinical subjects has been increased considerably. Many of the new illustrations are photographs of patients suffering from diseases of the organs of internal secretion.

As examples of the value of this important work to the practitioner we may cite the following extracts from the chapter on the pancreas: "Whatever may be subsequently discovered to be the true function of the islets of Langerhans, their intimate anatomical relationship with the zymogenous tubules, the numerous transition forms in all groups of vertebrates, and the transformation of alveolus into islet, and vice versâ, all appear to prove conclusively that the islets are not organs *sui generis*, but an integral part of the pancreatic tissue." Again: "Recently it has been found that diabetes may be induced artificially in the dog if a sufficient portion of the pancreas be removed, leaving the remainder with its normal blood supply and its normal connexion with the duct. In such cases the progress of the disease is hastened by carbohydrate feeding." "Organotherapy—treatment of diabetes with pancreas or extracts made from it—appears to be useless. The most modern form of treatment and, so far as can be judged from the clinical evidence available, the most successful form, is by fasting, combined with vigorous exercise." "An important function of the pancreas appears to be to increase the resistance of the body towards bacterial infection. Extracts of pancreas are employed medicinally in gangrene and tuberculosis, as well as in pancreatic diabetes. The use of such extracts with the object of increasing the resistance to infection is of recent date, but is deserving of further practical study." Be it noted that the Toronto physiologists have just discovered how to make an extract of pancreas potent against diabetes.

Turning to the chapter on the reproductive organs we are reminded that in the human subject Lichtenstern reports that after loss of both testes, transplantation of a testis from another man restores the previous physical and psychical condition. An excellent, restrained, and cautious summary of the probable functions of the adrenals is given on page 248.

The view put forward by the author that the coccygeal bodies are safety valves in the course of the peripheral circulation seems very questionable; safety valves to what—blood pressure? After summarizing the reported effects of extirpation on the pituitary, experiments of Camus and Roussy are cited on page 365 "which, if confirmed, will necessitate a reconsideration of our whole attitude in relation to the pituitary body."

COLLOIDAL CHEMISTRY OF THE PROTEINS.

THE researches of W. PAULI on the proteins with reference to colloidal behaviour have had an important share in the development of our present knowledge of colloids, and have added considerably to our information on the properties of the protein molecule. The appearance of a book from the pen of this investigator is therefore of sufficient interest to attract the notice of all who study chemistry in its relation to biology. His book, which has been ably translated into English by P. C. L. THORNE, under the title *Colloidal Chemistry of the Proteins*,[3] is not a complete handbook on the subject, but is intended to give a connected account of the author's investigations, and of the theoretical conclusions developed from them. The reader is presumed to possess a certain acquaintance with the characteristics of colloids such as may be acquired from reading an introductory work, as, for example, that of E. Hatschek, recently published, to whom acknowledgement for helpful advice is expressed in the translator's preface to the English edition. The methods employed by the author are described, and the results achieved by him are presented in their relation to those of other workers with the aim of connecting and co-ordinating the theoretical views which are supported by his experimental work. The methods principally employed were those which are designated "electrometric" and "electrophoretic." They were used to determine to what extent salt formation takes place, under varying conditions, between proteins and those acids and bases which are capable of combining with proteins. The degree of hydrolytic dissociation and of ionization of the salts formed is illustrated by the results of extensive investigations. No unusual demand is made on the reader's knowledge of physical chemistry in order to follow the results of experiment and the theoretical discussions; they are approached from starting points familiar to all, and are presented in terms that are clear and free from the ambiguities which frequently attend a translation. We must not omit to note that ample data are given which may be valuable to those whose interest is more directly practical.

COMPARATIVE EMBRYOLOGY.

LIKE almost every other branch of science, that of the comparative embryology of vertebrates has made enormous advances within recent times. The magnitude of the subject may be realized by a glance at Professor BRACHET'S new *Traité d'embryologie des vertébrés*.[4] It contains 600 pages and

[2] *Internal Secretion and the Ductless Glands.* By Swale Vincent, LL.D., M.R.C.S., L.R.C.P., F.R.S.Edin., F.R.S.Canada, F.Z.S. Second edition. London: Edward Arnold. 1922. (Demy 8vo, pp. xx+422; 105 figures. 25s. net.)

[3] *Colloidal Chemistry of the Proteins.* By Professor Dr. W. Pauli, translated by P. C. L. Thorne, M.A.Cantab., A.I.C. Part I. London: J. and A. Churchill. 1922. (Demy 8vo, pp. xi + 140; 27 figures. 8s. 6d. net.)

[4] *Traité d'embryologie des vertébrés.* Par A. Brachet, Professeur à l'Université de Bruxelles. Paris: Masson et Cie. 1921. (Roy. 8vo, pp. xv+601; 567 figures.)

nearly as many figures, and provides a voluminous and most useful bibliography brought well up to date. Most earlier textbooks have dealt very largely, if not exclusively, with the embryology of mammals. Though such books serve a useful purpose, they fail often to give that comprehensive survey of the subject so necessary in order to grasp the true evolutionary conception to be derived from a comparative study of ontogeny. Professor Brachet's volume fulfils this object in an excellent manner.

The scheme adopted is to give an account of the development of the different systems as they occur in the different classes of vertebrates, having previously devoted the earlier chapters to a general account of the origin and development of the sexual cells and of the foetal membranes.

The author, while adopting the idea of development from three centres of growth which he terms acrogenesis, cephalogenesis, and notogenesis, appears to realize the difficulty of its application to such a form as the acraniate amphioxus. He brushes this difficulty aside, perhaps somewhat lightly, by stating that amphioxus is a very simplified vertebrate, and is only of use in the early stages of development—namely, segmentation, gastrulation, and the formation of the germ layers. In other words, amphioxus does not fit in with the theory.

In discussing the theory of the germ layers, which the author regards as fundamentally true, he states that it must not be pushed to the extremes some authors have attempted in the past. For example, he points out that the sphincter muscle of the iris has been shown to be of epiblastic origin; the same can be said of the muscles of the sweat glands in the skin and of the galactophorous canals of the mammary gland. From a consideration of these and other facts, Professor Brachet is led to suggest that the germ layers, like the blastomeres, "ont une potentialité réelle et une potentialité totale"; by the former he means what they normally become, by the latter what they are capable of becoming under varying influences, natural or experimental.

The interesting and much-debated question of the segmentation of the skull is discussed in the light of the varying results obtained by different investigators, more particularly with reference to the selachians. The conclusion reached is that the number of trunk segments incorporated in the formation of the head varies not only according to different groups, but even according to the species.

Enough has been said to show that Professor Brachet's book is not a mere statement of embryological details, but that the more important theoretical aspects of the subject receive attention. The book is a valuable one and will be welcomed by all embryologists; and, as every such book dealing with so intricate a subject should be, the illustrations are numerous and exceedingly well executed. That so much can be devoted to illustration is a hopeful sign that indeed "things are looking up" amongst some of our allies.

NOTES ON BOOKS.

THE popularity of Dr. W. A. BREND'S *Handbook of Medical Jurisprudence and Toxicology*[5] can be gauged from the fact that the fourth edition follows the third within the space of three years. Of this small work we may say again that it furnishes an excellent outline of forensic medicine and toxicology for the use of students and practitioners, and that the information given, so far as we have tested it, is not too much condensed for a clear understanding of principles. The new edition contains the same number of pages as its predecessor, and in other respects the alterations are few. We observe that in Chapter XVII, on medical privileges and obligations, some paragraphs have been modified in accordance with recent changes in the law or in administrative procedure. On the other hand, in the section on cocaine poisoning the sale and prescription of this drug is said to be still subject to regulations made under the Defence of the Realm Act; the regulations now in force were made under the Dangerous Drugs Act, 1920. Fashions in textbooks come and go, but we foresee a long period of usefulness for this very short but none the less readable and trustworthy guide to the medico-legal aspects of practice.

Dr. ALEX. MAXWELL ADAMS, of Tibshelf, Derbyshire, has published an interesting little book[6] on the medical history of his own branch of the Adams family. The author gives particulars of sixteen of his family who were, or are, members of the medical profession, and he informs us further that all the living members of the family are, or have been, members of the British Medical Association. Perhaps the most interesting chapter in this history is that devoted to the life of Alexander Maxwell Adams (*primus*), the first of the many distinguished medical men of his line, who was born in 1792 and died in 1860. He was a friend of Dr. Robert Knox, the anatomist who was more or less innocently implicated in the Burke and Hare murders, in regard to whom the author gives some hitherto unpublished anecdotes. Scattered throughout the other chapters of the book are many other stories, new and old, of medical men and medical life. The author in his own career has had a varied experience of the world, from town and country practice in Scotland to the tea gardens in Assam, then West Africa, round Cape Horn in a sailing ship, an insurrection in Chile, and eventually seventeen years in rural Derbyshire. Of the present generation of the Adams family detailed here, perhaps the most distinguished is Dr. James A. Adams of Glasgow, consulting surgeon to the Glasgow Royal Infirmary, and the well-known member of the General Medical Council. Dr. A. M. Adams is to be congratulated on his record of a notable medical family.

The Practitioner's Loose-Leaf Pocket Book,[7] brought out by Messrs. H. K. Lewis and Co., is a nicely got up and convenient arrangement whereby case records, visiting lists, temperature charts, and records for vaccination and infectious diseases, all on thin cards of the same size, can be carried about in a case, from which they can readily be removed. The loose-leaf system has been employed with success in various publications, and in this instance its application to a visiting list is most convenient, for it enables it to be used in connexion with a card-index catalogue, and the number of loose-leaf cards can, of course, be varied to suit individual requirements.

[5] *A Handbook of Medical Jurisprudence and Toxicology.* For the Use of Students and Practitioners. By W. A. Brend, M.A.Camb., M.D., B.Sc.Lond., of the Inner Temple, Barrister-at-Law. Fourth edition, revised. London: C. Griffin and Co., Ltd. 1922. (Pott 8vo, pp. xiii + 317. 10s. 6d.)

[6] *A Dynasty of Doctors.* By Dr. Alex. Maxwell Adams. Reprinted from *The Hamilton Advertiser and County of Lanark News.* 1922. (Pp. 64.)

[7] *The Practitioner's Loose-Leaf Pocket Book.* London: H. K. Lewis and Co. (Prices 7s. 6d. and 10s. 6d.)

THE STORY OF "BRAIN."

COMPLIMENTARY DINNER TO DR. HEAD.

A COMPLIMENTARY dinner was given to Dr. Henry Head, F.R.S., on May 26th in recognition of his eminent services to neurology as editor of *Brain* for seventeen years. Most appropriately, remembering the fundamental importance of his own contributions to neurology, Sir CHARLES SHERRINGTON, President of the Royal Society, was in the chair.

The CHAIRMAN, in proposing the health of Dr. Henry Head, said that under his direction the influence of *Brain* had been increased and extended. It formed a living bond between neurologists in these islands, across the Channel, and beyond the Atlantic. Every worker in neurology, wherever his lot was cast, had learnt that if he took thorough work to the editor of that journal he was sure of a sympathetic hearing and of an opportunity. Dr. Head had consistently upheld the scientific method in neurology, both in his own work and in the selection of papers for publication; he had his reward in the position *Brain* had attained as a worthy representative of British science and a moving spirit in the development of neurology throughout the world.

Sir DAVID FERRIER, at the invitation of the Chairman, sketched the history of *Brain*. In 1877 some of those most interested in neurology felt that the time was ripe for the establishment of a special journal. The reports of the West Riding Asylum, the first school of neurology in this country and founded by Sir James Crichton-Browne in 1871, had come to an end in 1876, when their editor was appointed Lord Chancellor's Visitor in Lunacy. Under the editorship of Croom Robertson, then Professor of Psychology in University College, London, *Mind* had been started in 1876, but it was concerned mainly with pure psychology, and a journal more particularly devoted to the anatomy, physiology, and pathology of the nervous system seemed to be needed. A committee, consisting of Sir James Crichton-Browne, Sir John Bucknill, Dr. Hughlings Jackson, and himself, resolved to establish such a journal, and selected the title *Brain*—a title which was warmly approved by Charcot, among others. It was to be managed by the committee, and edited in alternate years by Crichton-Browne and Ferrier. The first number was issued in April, 1878, and this rather unusual, and to the committee rather expensive, arrangement, as to the editing continued for five years. Then with Volume VIII Dr. de Watteville became acting editor, working under the Editorial Committee, to which Dr. James Ross of Manchester and subsequently Dr. T. Buzzard were added.

In 1888 *Brain* became, with Volume X, the journal of the newly founded Neurological Society, but retained its title and editor. When Dr. de Watteville retired and went to live in Switzerland Dr. Percy Smith succeeded him, and was remarkably successful in relieving the financial difficulties under which *Brain* had always laboured. When he handed over to Dr. Head, in 1905, the journal was free from debt, and the high scientific reputation it had from the first enjoyed had since then been not only maintained but greatly enhanced, both by what may truly be termed the epoch-making studies in neurology by Dr. Head himself and by the many valuable papers which he had secured to the journal from contributors both at home and abroad. English neurologists had good reason to be proud of the position which *Brain* occupied in the world of neurology. Dr. Head's resignation of the editorship was a great loss, but they had the consolation of knowing that his mantle had fallen on one who would prove himself well worthy to wear it—Dr. Gordon Holmes.

Dr. HENRY HEAD, in responding, said that *Brain*, after its foundation in 1878, had a severe struggle for life and suffered from a constant deficit, which was defrayed from the pockets of the editors. It was while Dr. de Watteville was editor that *Brain*, in 1888, became the organ of the Neurological Society, and its position from that time forward ought to have been secured. Unfortunately, although the published papers grew in value expenses also increased out of due proportion. When Dr. Percy Smith took over the editorship of the journal it was saddled with a large debt, and there were no assets but the annual subscriptions from the Neurological Society, which were insufficient to meet current expenses. By rigid economy and the strictest attention to finance Dr. Percy Smith succeeded in producing a condition of solvency. "I am delighted," Dr. Head continued, "to see him here to-night, for had it not been for his devotion there would have been no journal to-day. When I took it over from his hands it was free from debt, but there is no security in this mutable world, and within two years we were faced with the amalgamation of the Neurological Society into the corporate body of the Royal Society of Medicine. This was in 1907; it meant the cessation of all obligatory contributions, and *Brain* was thrown on to the world to sink or swim on its own merits. Guarantors came forward; the form of the journal was changed so as to improve the character of the page, a new fount of type was cast, and each volume was issued at 14s., which was then considered a fair price. Subscriptions flowed in to make up the deficit due to the loss of members of the Neurological Society, and I am proud to say that the guarantors have never been called upon to contribute a penny. The next crisis came with the outbreak of war; in 1915 contributions ceased; I was almost in despair. But during the early days of the war I had been reading Dr. Hughlings Jackson's papers on aphasia, and was so struck with the way in which they had been lost to science that I reissued them as a double number of the journal. I received letters from all parts of the world about them, and v. Monakow not only translated them into French but devoted a large issue of the *Schweizer Archiv* to a critical consideration of Jackson's views, which were entirely unknown on the Continent. Then Sir Charles Sherrington came forward with his classic paper on "Postural activity of muscle and nerve," which has had so profound an influence on English neurology, and we were saved. The issue of the journal might be delayed, but every year of the war a volume appeared and the character of the papers retained a high standard. Then suddenly we woke up to the danger produced by the colossal rise in the price of paper and the treble increase in wages. In 1916 we were a paying concern, but in 1917 with the same number of pages we were in debt. Drastic measures were taken and we pulled through. Finally, by the end of the last financial year (June, 1921), we had paid off our debt without touching capital and were again making a profit. Moreover our subscribers had increased, in spite of the rise in the subscription to 24s. a volume. Through all of these changes and chances, I have had the unvarying support of the committee of guarantors, and I cannot find words adequate to express to them my thanks. A united country can present a firm front to adversity and is able to make itself felt in the comity of nations. This we have done. For *Brain* has become an international organ of neurology. It is universally taken to represent the serious side of English work. To be truly international it is necessary to be at the same time national. The Continent wants no pale reflection of itself. English neurology has influenced foreign thought because it has brought into knowledge something distinctive. It has been characterized throughout by two features—its dependence on clinical observation and its consistency in looking at pathological facts from the physiological point of view. There is no doubt that this began in 1859, when Brown-Séquard was appointed to the National Hospital, Queen Square. Hughlings Jackson was profoundly influenced by that adventurous genius, more perhaps through intercourse with his famulus Victor Bazire than by direct contact with Brown-Séquard himself. The next most serious influence to which English neurology has been exposed was the publication in 1906 by their Chairman of the "Integrative action of the nervous system." This reinforced the tendency, always present, to regard pathological facts from a physiological standpoint, a principle still incompletely assimilated by our colleagues abroad. Thus, with every number of *Brain* issued from the press it becomes more and more obvious that we have a message for the world. We can hold up our heads and speak with the enemy in the gate. It is our business, therefore, to raise our journal to the highest pitch of efficiency as the expression of English neurology. This is the task for the younger men, and I rejoice to think that it has passed into the competent hands of Dr. Gordon Holmes. As an old captain I can take my leave with a certainty that the ship will make voyages into fresh lands and carry fruitful cargoes to the greater glory of that branch of science we all have so truly at heart.

The health of the chairman was proposed by Sir WALTER FLETCHER and briefly acknowledged by Sir CHARLES SHERRINGTON. The guests, who numbered between forty and fifty, took opportunity after the dinner informally to thank Dr. James Taylor, who made the arrangements.

A HALF-CENTURY OF PUBLIC HEALTH IN NORTH AMERICA.

BY

JOHN C. McVAIL, M.D., LL.D.

(*Continued from page 846.*)

III.

FOOD CONTROL.

THROUGHOUT the Jubilee volume a reader in this country will often be struck by the legislative and administrative difficulties which arise from the fact that each of the States in the great republic is in many ways practically independent of the rest, and that the functions of the Federal Government in respect of control and co-ordination are limited. This is well illustrated in the article on Federal food control by Dr. Carl L. Alsberg, Director of the Food Research Institute of the Leland Stanford University.

A model law was prepared, but Federal control was thought unattainable, State action was sometimes limited to special objects, such as the protection of the dairy industry from competition by substitutes. In 1881, through the influence of a joint committee representative of various public bodies, a food and drug law was passed for the State of New York, which it was hoped would be generally adopted by the several States. Various other States passed food laws within a few years, but uniformity only began to appear with the passage of a Federal Food and Drugs Act in 1906. This Act was supplementary to the laws of the separate States; not only did the laws differ from each other in terms, but the interpretation put on them differed also, so that what was permitted in one State was prohibited in another. Under the Federal Act a considerable degree of uniformity was achieved through the operations of an office of co-operation established by Dr. Alsberg. The Secretary of Agriculture is at the head of the system and acts through the Bureau of Chemistry. There are stations in the leading trade centres. With regard to the general effect of the Act Dr. Alsberg makes the following statement:

> "Through the drastic power conferred in the seizure action of the Federal law, it is possible by means of concerted action of Federal, State, and municipal officials, to seize in widely separated parts of the United States a large number of shipments of any manufacturer who may be found to be shipping in inter-State commerce foods and drugs adulterated or misbranded within the terms of the Federal law. . . . The usual effect is an immediate change for the better in the product. . . . Probably no commodities regularly sold are to-day as free from adulteration and misbranding as are foods."

Newer and refined forms of adulteration are being developed with the idea of cheapening the product, and though these

are not directly hurtful to health, yet effective control requires professional men of high training. Dr. Alsberg urges that such men cannot be obtained without adequate salaries, that there is more work to be done in establishing food standards, and that education should go hand in hand with regulation and legislation.

In an article on food conservation Professor Samuel C. Prescott of the Massachusetts Institute of Technicology shows how the food supply of the world has been in effect increased by the invention and development of methods of preserving foods which, when fresh, have only a very localized area of availability. Dehydration, canning, and refrigeration are the methods discussed and described.

Dehydration, which is the oldest method, was resorted to, though not always successfully, for preservation of vegetables during the American civil war, also for Alaska during the Klondike boom, and again in the Boer war and the world war. If the process is properly applied to materials in prime condition they can be restored by soaking in water. The question whether vitamins are adversely affected by dehydration is not yet settled.

A method of canning was patented so early as 1810, but it was Pasteur's discoveries that made a scientific system possible. The difficulties overcome up to and including the modern application of steam under pressure are recounted. The industry now includes the preservation of nearly all classes of food—soups, fish, shellfish, meats of all kinds, sausage, baked beans, vegetables single and combined, cereals, poultry, milk, butter, cheese, syrups, fruits, and many others. Though refrigeration is of ancient origin, sound frozen meat was first successfully carried to England from the United States in 1875–76, and from Australia in a refrigerator ship in 1880. Professor Prescott holds that but for conservation "food prices would be prohibitive, the health of urban communities would be endangered, and starvation would be imminent in our large cities."

MILK CONTROL.

The importance of milk control seems, if possible, to be even more fully appreciated in America than in this country, owing perhaps to the higher summer temperature. Excepting that little or nothing is said either as to details of the construction, ventilation, and cleanliness of cowhouses, or fraudulent adulteration by addition of water or abstraction of fat, no aspect of the question appears to be omitted from the paper Dr. Charles E. North has contributed. It is pointed out that Dr. W. M. Taylor of Penrith was the first to call attention, in 1857, to the conveyance of typhoid fever by milk, and the first (ten years later) to trace the spread of scarlet fever to a milk source. Dr. North calls attention to an important event in 1881—the publication by Mr. Ernest Hart, then editor of the BRITISH MEDICAL JOURNAL, of a list of epidemics due to milk: 50 of typhoid fever, 15 of scarlet fever, and 4 of diphtheria. The earliest reported outbreaks of diphtheria due to milk were by Dr. Jacob at Sutton in 1877 and Mr. W. H. Power in London in 1878. In the same year the first recorded outbreak of septic sore throat due to milk was reported, 300 cases having occurred in connexion with one dairy at Aberdeen, as well as 90 among boys at Rugby School.

In America a great diminution of epidemics due to milk has taken place since 1907. Until then pasteurization was practised by few cities, but it has become very general. Dr. North gives a table, on the lines of Mr. Ernest Hart's, of milk epidemics gathered from many sources in America and elsewhere year by year from 1857 to 1920. These statistics certainly show a very remarkable diminution after 1907, maintained up to and including 1920, when the table ends. For the thirteen years 1908–20 inclusive he was able to collect only 40 outbreaks of typhoid fever due to milk, 4 of scarlet fever, and 3 of diphtheria; in the previous thirteen years he found 138 outbreaks of typhoid, 36 of scarlet fever, and 19 of diphtheria. Records of outbreaks of sore throat, however, have been more numerous (4 in the earlier period and 16 in the later). It would be hasty to assume—and Dr. North does not do so—that the diminution is wholly due to pasteurization of milk. The figures relate not only to America but to other countries where pasteurization is not so general. In this country, from which typhoid has for the time at least almost disappeared, account has to be taken of improved water supplies, control of the sale of oysters and of other shellfish, and various other factors. Dr. Hamer's observations on the subject have to be borne in mind, and probably an epidemiologist would hesitate to accept too readily any single factor in explanation of the change.

With regard to infant mortality, Dr. North, like other contributors to the volume, calls attention to the incompleteness of vital statistics in the United States. He writes that "Chicago records are not given because infant births are not recorded." That is a most amazing fact for the second largest city in America. He goes so far, however, as to declare that before health authorities became active "more than half of the infants born perished during the first year of life." Mention is not made of the data on which this strong statement is based.

Milk Preservation.

With regard to the preservation of milk, it is stated that without any precautions whatever excepting cleanliness in production and cold in preservation milk sent from America every two or three weeks to the Paris Exhibition of 1900 kept sweet a fortnight after bottling, in striking contrast to French exhibits of milk. Raw milk of this purity is "certified" in part of New Jersey by a Medical Milk Commission. The considerations are bacterial condition, keeping qualities, and resistance to fermentation, nutritive value, and chemical composition. But the total quantity of available certified milk is small, some serious outbreaks have occurred in course of its use, and some certified herds have been found infected by tuberculosis on a large scale, so that most public health authorities prefer pasteurization. Yet Dr. North himself has great confidence in the possibilities of cleanliness. "As further evidence of the fact that methods and not equipment are the primary factors in producing clean milk," Dr. North "transported ten dairy farmers from their homes into a new dairy district, where in ten barns of the ordinary type, entirely strange to them, with no changes in equipment, these men produced milk within the limits of the certified standard for bacteria of 10,000, compared with milk containing many millions of bacteria produced in the same places the previous day by the owners of the premises." Independently of whether pasteurization is resorted to, the principles of clean production have been largely adopted, and most of the Grade A milk used in large cities is now produced by this system. As to pasteurization, he expresses the opinion that it should be done not domestically, but on a large scale for cities, and states that many such cities have followed the lead of Chicago and adopted regulations requiring pasteurization. In many smaller cities opinion is still divided, although public health authorities are practically unanimous in its favour.

Infant Milk Dépôts.

As an indication of the development of infant milk dépôts in America, he mentions that in New York fully 27,000 babies are enrolled at the stations of the Department of Health and over 6,000 at private agency stations. The death rate among enrolled babies is less than 50 per 1,000 births, and a reduction of 10 per cent. in the previous rate is not uncommon. The question whether such a reduction is due to milk or to education was, it is considered, answered in 1912 by a report of observational work done under the Rockefeller Institute, the feeding of large groups of infants on different milks having the following results:

Milk.	*Mortality.*
Condensed	20 per cent.
Store	19 ,,
Good bottled	9 ,,
Milk dépôt	2.7 ,,

Opinions differ, however, one medical authority concluding that of a 60 per cent. reduction in mortality 15 per cent. was due to education and 45 per cent. to milk, while another held that if the total reduction is represented by 100, then only 20 per cent. of it was due to milk and 80 per cent. to training of mothers. On these differences Dr. North remarks that the conditions in the two groups were not the same, the milk in the former case being completely prepared for use, while in the latter nurses instructed the mothers how to prepare it. In laboratory work chemical testing is done by the Babcock method (sulphuric acid), which in America is universally considered the standard, and it can be used by any intelligent superintendent. In bacterial testing the count occupies the first place, and confidence in such testing is increasing. Five samples of the same milk are required to give a reliable result, placing the milk in Grade A, B, or C.

(To be continued.)

GLASGOW ROYAL INFIRMARY: VIEW FROM THE SOUTH-EAST.
(Reproduced from an architectural drawing.)

NINETIETH ANNUAL MEETING
of the
British Medical Association.
GLASGOW, 1922.

THE MEDICAL INSTITUTIONS OF GLASGOW.

"LET Glasgow flourish by the preaching of the Word"; "The poor were visited gratis and the Faculty adjourned." In these two phrases—the first, the motto of Glasgow, the second, the time-honoured formula with which every minute of the Royal Faculty of Physicians and Surgeons concludes—lies the spirit which has actuated Glasgow's citizens and Glasgow's doctors in founding and building, maintaining and staffing its many medical institutions.

It is a far cry in time from the Hospital of St. Nicholas of 1471 to the Royal Infirmary of 1922, but they are still together in space, in the same square—the one, the oldest house in Glasgow, plain, small-windowed, low-roofed, with walls restrengthened, a house for show; the other, lofty, baronial, busy with the activity of healing and teaching. A score of years after Robert the Bruce died of leprosy in 1329, the Leper Hospital of St. Ninian was built, close to the river, on its southern side; now only Hospital Street and St. Ninian Street unattractively preserve locally the memory of the founder, Lady Lochow. Exactly six centuries after the Hero King fought Bannockburn, King George, in 1914, four weeks before the beginning of the greatest of all wars, opened Glasgow's newest hospital —the Royal Hospital for Sick Children—again close to the river, crowning a hill, overlooking docks and shipyards, with a wide view of the lower Clyde valley and the western mountains. It is a long notable history of achievement and service. The Glasgow doctors originated the hospital ideas, and the public spirit of the people of Glasgow readily expanded them into material, planning, and building. The initiation of the scheme for building the first Royal Infirmary is credited to Jardine, the Professor of Logic, eagerly supported by Dr. Stevenson, the Professor of Medicine; the Eye Infirmary owes its birth to Dr. William Mackenzie, one of the greatest ophthalmologists of his day; the Victoria Infirmary arose through efforts of the doctors on the south side of Glasgow; and the Royal Hospital for Sick Children came into being largely through the influence of Dr. Finlayson, one of Glasgow's greatest clinicians.

While we remember these, we must not forget the part played by the citizens of all classes of society. Some names at once spring into evidence: the brothers John and James Templeton, of carpet-making fame; Robert and James Dick, the gutta-percha manufacturers; Edward Davies, John MacFarlane, David McCowan, John Freeland of Nice, William MacEwen, a distinguished merchant popularly called "the horse of knowledge"; Walter Couper of Cathcart, and Miss Schaw, are only a few of those who, out of their wealth and organizing ability, gave freely to the voluntary hospitals. All that they did carried the work but a little way, and it is to the great mass of the nameless ones of Glasgow in its industrial areas and in its commercial centres that the city after all owes its long and magnificent hospital record.*

* Previous articles, on the City and University of Glasgow and its neighbourhood, have appeared in the BRITISH MEDICAL JOURNAL of December 3rd, 1921, p. 961, January 7th, 1922, p. 29, February 11th, p. 242, and April 22nd, p. 649.

THE GLASGOW HOSPITAL SYSTEM.

THE hospital system of Glasgow may be partitioned off into five or six different classes.

First in order of time as well as in the affection of the people and medical profession of the city stand the great voluntary hospitals, both general and special. All of these cannot be noticed, but even the smallest of them holds a place in active life and charity.

Next come the municipal hospitals under the governance of the Corporation of Glasgow, famous the world over for municipal enterprise from the far-off days of 1859, when the waters of Loch Katrine were brought to Glasgow, down to the present when the street tram system is an object of envy to other cities. The Health Committee, in association with Dr. Chalmers, M.O.H., shoulder this great responsibility.

In the third class we place the hospitals under the Poor Law authorities, the Parish Councils, and District Boards of Control.

The fourth class has one hospital, the Glasgow Royal Mental Hospital at Gartnavel—a private institution, but governed by a body of directors.

Then we think that into a fifth class, standing also by itself, may be placed the Princess Louise Scottish Hospital for Limbless and Disabled Soldiers and Sailors at Erskine.

And last of all the private nursing homes of Glasgow deserve a place, playing as they do a large part in the intimate life of the well-to-do people of the city.

THE VOLUNTARY HOSPITALS.

When the British Medical Association met in Glasgow in 1888, the old "Royal," designed by the brothers Adam nearly a hundred years before, was still feeling acutely the movement westwards of the University, though to the people of Glasgow it was The Infirmary. It was there, only twenty years before, that Lister was carrying on that great task which inaugurated the new era in surgery. And it was there that many members of the Association crowded the wards to see the work of Macewen, brilliant in conception and daring in originality.

GLASGOW ROYAL INFIRMARY QUADRANGLE.
In bottom left-hand corner is the old Lister Ward.
(Photograph by T. and R. Annan and Sons.)

The Royal Infirmary of To-day.

This year the Association will find a new "Royal" that has arisen phoenix-like out of the ruins of the old, and they will find it modern, thoroughly equipped and hard-working, striving to live up to its great reputation. The nominal number of beds in the infirmary is 665, though its daily average of patients is always higher. There are five physicians, six surgeons, and special departments in gynaecology, ear, throat and nose, and skin diseases, and pathology. Each physician has charge of two large wards with ample side-room accommodation and an excellent classroom and clinical laboratory; each surgeon has three wards and operating theatre arranged on one flat, with an average number of patients of 52. The medical officers attached to the infirmary number 105, and there is a nursing staff of 270. The out-patient department deals with many thousands of patients in the year. The electrical department is a large organization with a staff commensurate to the great and increasing needs of this kind of work. From 1794, when the Royal Infirmary was opened, till 1874, it was the only hospital available for instruction in clinical medicine and surgery in Glasgow; after the removal of the University from High Street to Gilmorehill in the west end of the city the Royal Infirmary ceased to be used for clinical purposes except for students attending Anderson's College. It was then felt that a school of medicine worthy of the infirmary should be instituted, and in 1882 buildings were completed to the north of the old infirmary; for many years this school was attended by students desirous of obtaining the triple qualification of the Royal Colleges of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow. In due time St. Mungo's College was instituted, the number of classes was increased, and a Faculty of Law was formed with an adequate staff. In 1911 the definite association of the Royal Infirmary with the university was re-established, and there are now in the infirmary four university professors in medicine, surgery, midwifery, and pathology. Thus the infirmary is crowded once again with students, both men and women, who find in its wards and out-patient departments abundant opportunities for the study of disease and a wealth of clinical material probably unsurpassed.

Plans for the working of the infirmary on a part-time unit system are being considered, and if these come to fruition the training of students and the junior staff will assuredly strengthen the already sound position of the Glasgow school.

The Royal Infirmary possesses another distinction: it has the great merit of having closed its last two financial years with a surplus. When it is considered that the ordinary expenditure in 1921 amounted to £118,250 (the average cost of each fully occupied bed being for that year £171 19s. 7½d. and the average cost of each patient under treatment £10 16s. 2½d. for an average residence of twenty-three days), and that huge expenditure was met with some hundreds of pounds to the good, it will be readily understood that the skill and watchfulness of the management are only equalled by the extraordinary generosity of the people of Glasgow and their anxiety to preserve the voluntary principle of hospital management. As the result of efforts in better organization for seeking subscriptions from the industrial workers of Glasgow the large sum of £30,000 was subscribed in 1921 by this class of subscribers alone. Legacies still continue to fall to the infirmary. These should go into the capital account, but the needs of current expenditure divert them to this use, and it is possible that this source of revenue in these difficult times is more likely to dry up than increase in the volume of its stream.

The Western Infirmary.

When the University removed to the western portion of the city it soon became evident that an infirmary was required close to it for the purposes of clinical teaching. The Western Infirmary was opened in 1874 and has been added to repeatedly since. In 1904 the new out-patient department was opened; in 1906 and 1911 new wings were added to the main building of the infirmary; in 1913 the Pathological Institute was enlarged, and in 1921 a massage building was erected. It is evident therefore that the Western Infirmary is keeping pace with the demands made upon it, both for the treatment of the sick and for the teaching of students. There are thirty-two wards in the infirmary, four services of medical wards, and six services of surgical wards, with wards for the various specialties. The medical and surgical staff number 60; each surgeon has his own theatre on the same flat and in close proximity to his wards; there is a nursing staff of 226. In 1921 the average daily number of in-patients was 557. The Western Infirmary is blest with a beautiful situation, a southern exposure with a large open space in front, and its grounds adjoin Kelvingrove Park. The close proximity of the University is a time-saving factor of great value to students. The infirmary is fortunate in the possession of an excellent convalescent home, the gift of Lord Newlands; the home is situated in Lanark, a town renowned for its fresh upland breezes. The successful management of the Western Infirmary is due in great measure to the organizing ability

and knowledge of hospital construction possessed by the Superintendent, Colonel D. J. Mackintosh, C.B., M.V.O., LL.D., M.B., one of the foremost hospital authorities in the kingdom.

The Victoria Infirmary.

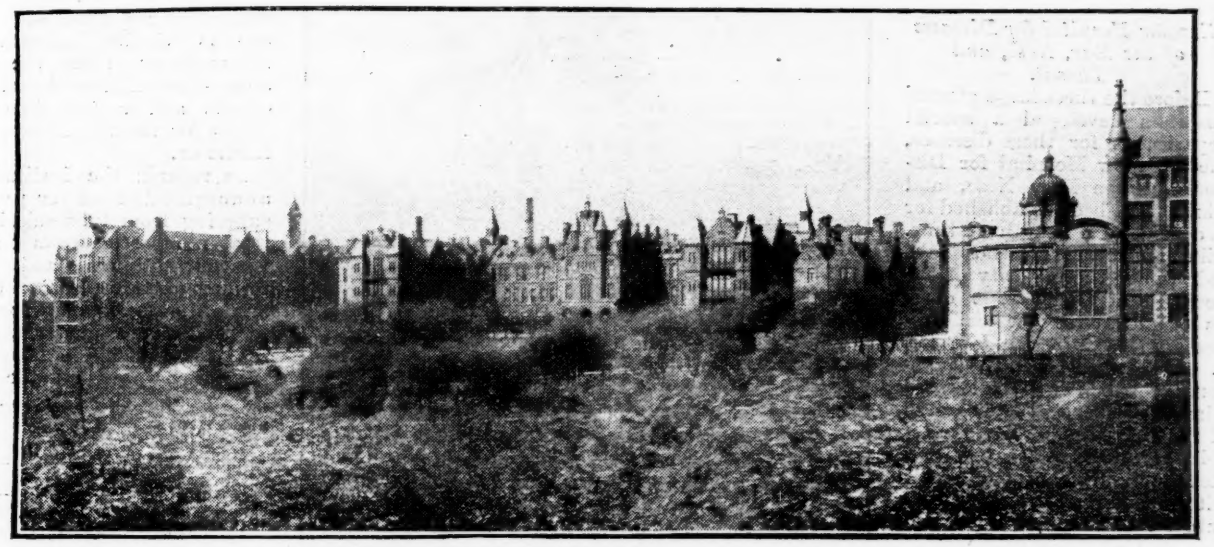
The Victoria Infirmary is the third of the large general hospitals in Glasgow; it is very pleasantly situated on the southern outskirts of the city, almost on the site of the battle-field of Langside, where Mary Queen of Scots was defeated by Regent Moray. The infirmary grounds are extensive and its amenity is increased and rendered more attractive by its proximity to the Queen's Park. The infirmary was opened in 1890, with accommodation for 60 patients; the increases have been steady till now the nominal number of beds is 260. The visiting staff consists of three surgeons, with four assistant surgeons, and two physicians, with four assistant physicians; there are also special wards for gynaecology, nose and throat, and skin diseases. There is a large out-patient department, which is situated in a densely populated portion of the city near the docks; this department is known as the Bellahouston Dispensary, and there the number of attendances is estimated, as in most infirmaries, in thousands. The infirmary possesses an excellent clinical research laboratory, the gift of a well-known shipowner of the city. The convalescent home is at Largs, on the Firth of Clyde, and has accommodation for 30 patients. It is only within the last two or three years that, owing to the large number of students, the Victoria Infirmary has been able to take its rightful place in clinical teaching. The distance from the University and from the centre of the city is a somewhat serious matter and has hitherto deterred the student. Within the past year a most excellent scheme for the expansion of clinical teaching has been inaugurated, the funds subscribed by a few generous donors yielding an income sufficient to establish a post-graduate school.

Royal Maternity and Women's Hospital.

The Glasgow Royal Maternity and Women's Hospital possesses 114 beds and is probably one of the largest, as it is certainly one of the most thoroughly and efficiently equipped, maternity hospitals in the kingdom. It was founded in 1834 and its beginnings were modest. The first hospital found a home in the second flat and garrets of the old grammar school at a rental of £30 a year. The early years of the institution revealed a constant struggle against the outbreaks of septic infection, and it was not till 1860 that a house at the corner of North Portland Street and the Rottenrow was purchased for a new hospital and the building adapted for that purpose. Conditions still were unsatisfactory, and in 1881, on the same site, the maternity hospital was built. This building still stands. It was in this building that Murdoch Cameron first performed the noteworthy and successful Caesarean sections which put that operation on a sure footing. In 1903 the present hospital was opened; it contains 19 wards, which are apportioned into 12 lying-in wards, 3 isolation wards, 2 ante-natal wards, and 2 labour wards; the 114 beds are divided therefore into 89 obstetric beds and 25 ante-natal beds. The hospital staff consists of six visiting physicians, five assistant visiting physicians, one pathologist, and one physician at the gynaecological dispensary. There is an outdoor department from which patients are attended at their own homes by district nurses and students, and there are three outdoor dispensaries—gynaecological, ante-natal, and post-natal. An important auxiliary to the hospital is the maternity and child welfare centre, consisting of a complete indoor and outdoor ante-natal department and infant consultation clinic. In recent years the research department of the hospital has come into prominence for its most excellent work. By arrangement with the Medical Research Council the department was opened towards the end of 1919. The Royal Maternity Hospital is on the voluntary basis entirely, and, like the other great hospitals of Glasgow, depends largely on subscriptions from the industrial workers of the city. Both in this hospital and in the others workmen's representatives on the boards of directors are found to be men capable of taking broad, sensible views and possessing sound business capacity.

Royal Samaritan Hospital.

The Royal Samaritan Hospital was established in 1886 and meets the needs of a very large number of women of the working classes, belonging mostly to the southern portion of the city. It has accommodation for 92 patients; there are four surgeons, all of whom are gynaecological surgeons in private practice. A feature of recent years has been the excellent facilities for post-graduate work offered by the hospital, and these have been largely taken advantage of, not only by local practitioners but by practitioners overseas.



Photograph by] THE WESTERN INFIRMARY, GLASGOW. [*T. and R. Annan and Sons.*

Royal Hospital for Sick Children.

The Royal Hospital for Sick Children stands on a piece of rising ground where once stood the mansion house of Yorkhill. It is admittedly one of the finest hospitals for children in existence. We have already indicated the excellence of its site from the scenic point of view. Let it be noted, too, that it is within five minutes' walk of the University and the Western Infirmary. The hospital contains twelve wards and has accommodation for nearly 300 patients, one-third of whom are medical and the rest surgical; the patients must not be over 13 years of age. The hospital draws upon a large area, which includes not only Glasgow but the whole of the west of Scotland. A few figures will show the large amount of work which is done in this institution: in 1921 the indoor patients numbered 4,749; the out-patients seen at the hospital were 2,162; while at the old dispensary—which is nearer the centre of the city—14,769 patients were treated in that year. The visiting staff consists of one physician with four assistants, two surgeons with six assistants, and there are three visiting specialists; the nursing staff numbers 102. This hospital, again, is maintained by voluntary subscriptions. The expenditure during 1921 was

a little over £34,000. Of recent years considerable attention has been given in the research department of the hospital to the etiology of rickets and to syphilis in infancy. The country branch of the hospital is situated at Drumchapel, about six miles to the west of the city.

The Eye Infirmary and Ophthalmic Institution.

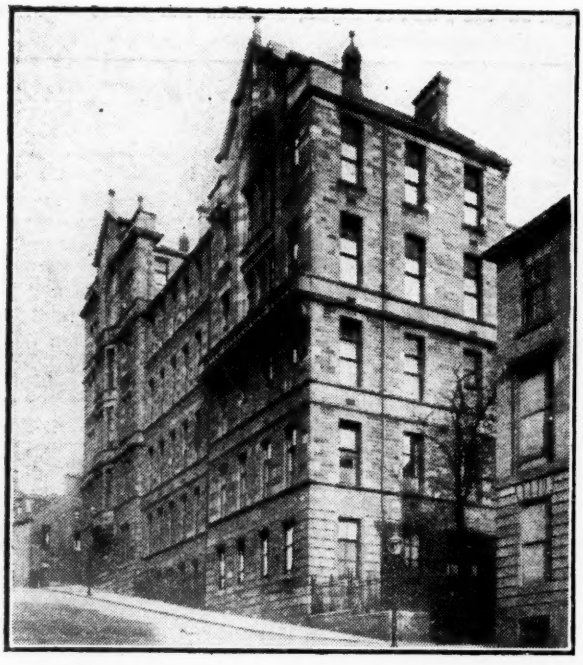
There are two main hospitals for diseases of the eye. The Eye Infirmary is situated in Berkeley Street, its original site, where in 1824 it was founded by one of its first surgeons, Dr. William Mackenzie; the building has been altered, and additions have been made from time to time. It has accommodation for 105 indoor patients, and there is a large out-patient department. An important adjunct to the infirmary is a second out-patient department at Charlotte Street, in the east end of the city, recently rebuilt.

The Ophthalmic Institution constitutes the department for the diseases of the eye of the Royal Infirmary, and is managed by the Directors of the Royal Infirmary. This institution owes its origin to Wolffe. It is situated in the centre of the business portion of the city, in West Regent Street.

These two institutions see many thousands of patients in each year, both in their indoor and in their outdoor departments.

Glasgow Hospital for Diseases of the Ear, Nose, and Throat.

Before the three large general hospitals developed a special department for these diseases, the Glasgow Hospital for Diseases of the Ear, Nose, and Throat had been established for a considerable length of time. Like many other of the hospitals, indeed, like the majority of the hospitals of Glasgow, it owes its origin to the medical profession. In 1872 the late Dr. J. P. Cassells opened a dispensary which was called the Glasgow Dispensary for Diseases of the Ear; this ultimately developed into the Glasgow Ear Hospital and from 1880 dealt with indoor patients as well as outdoor. Dr. Andrew Buchanan was at that time president of the hospital and maintained an intense interest in its work. The hospital is situated in Elmbank Crescent, where it has been since 1885. The large increase in the amount of work of late years has firmly impressed the directors with the necessity of finding new premises. An excellent site in St. Vincent Street, close to its junction with Bothwell Street, has been obtained, and it is hoped that within a very short time the new building will be begun. It is unnecessary to do more than indicate that the hospital attendances number many thousands in the year, and the work taxes the energies of the two visiting surgeons and four assistant surgeons to the uttermost. In spite of limited accommodation (the number of beds is only 15) the hospital affords a most excellent clinic, both for students and graduates. This hospital had the enviable distinction of possessing a substantial balance in the bank at the end of the last financial year.



THE ROYAL MATERNITY AND WOMEN'S HOSPITAL, GLASGOW.
(Photograph by T. and R. Annan and Sons.)

Glasgow Royal Cancer Hospital.

The Glasgow Royal Cancer Hospital is comparatively new, as it was rebuilt and completed during the year 1910. It is situated in the Garnethill district of the city, a few minutes' walk from the University. There are 50 beds in the hospital, and the staff consists of two surgeons, two assistant surgeons, a medical electrician, and a pathologist. There is no outdoor department. The number of patients treated in 1921 was 245. An important part of the work of this hospital is research; the directors and staff have no desire that the hospital should be regarded simply as a Friedenheim, where advanced cases of malignant disease may terminate their lives with some mitigation of their sufferings. The research department has been in serious financial difficulties since the close of the war, but recently a liberal donation helped to re-establish its work.

MUNICIPAL HOSPITALS.

Prior to 1865 infectious fevers were treated in the wards of the various poorhouses, the Glasgow Royal Infirmary, and in temporary hospitals occasionally erected to meet emergencies. The first Municipal Fever Hospital was opened in that year in Kennedy Street, off Parliamentary Road, and the second was Belvidere Hospital, at the eastern boundary of the city, opened in 1870. Since 1875 the local authority has been wholly responsible for the provision of accommodation for the treatment of infectious diseases. Besides making provision for fevers and the other diseases included in the zymotic group, the local authority has also made provision at Ruchill, Knightswood, and Robroyston Hospitals for patients suffering from tuberculosis in all its forms. The hospital beds available for infectious diseases in Glasgow have gradually, though not regularly, increased, till in 1921 there were 1,262 beds, which, in relation to the population, means 1.1 per 1,000.

In the six hospitals—Belvidere, Ruchill, Shieldhall, Knightswood, Robroyston, Bellefield—there is a resident medical staff of twenty-one and a resident nursing staff of 577; in addition there are an honorary consulting surgeon and three consulting surgeons, of whom one is visiting surgeon for tuberculosis; there are also a part-time radiologist for tuberculosis and a part-time specialist for venereal diseases and trachoma.

As regards the institutional accommodation for patients suffering from tuberculosis the total number of beds in the various hospitals and sanatoriums under the control of the authorities is 975, and if we add to this figure an average of 240 beds available in Poor Law institutions we find the total for tuberculosis patients in institutions is 1,404 beds.

HOSPITALS ADMINISTERED BY THE PARISH COUNCILS OF GLASGOW AND GOVAN.

The parish of Glasgow is the most populous in Scotland, the 1921 census showing it to have 596,085 inhabitants. The parish council controls the administration of one large general hospital, two district hospitals, a poorhouse, two seaside homes for adults and young persons, and two homes at the coast for children.

For cases of insanity the District Board of Control has two large and fully equipped hospitals for mentally deficient persons, practically the only institution in Scotland specially erected for the purpose.

In addition to the treatment of the indoor poor of the parish, including the boarding of children and harmless lunatics in private dwellings all over the country, the parish council has a roll of over 19,000 adults and their dependants chargeable throughout the year.

In 1921, for the first time in the history of the Scottish Poor Law, parish councils gave financial assistance to the unemployed, the amount up to the end of May, 1922, being £180,000. The total amount expended in ordinary Poor Law relief and lunacy within the parish was roughly a million pounds sterling for the past year.

The Northern General Hospital, Stobhill.

The Northern General Hospital, Stobhill, is the largest and most up-to-date Poor Law institution in Scotland. It was held available for military purposes, and on the outbreak of the war in 1914 it was converted into two military hospitals—the 3rd and 4th Scottish General Hospitals. The site of the hospital is an ideal one on a large elevated piece of ground in the northern side of the city, with an admirable outlook towards the hills in the west and north. The institution has accommodation for nearly 2,000 patients, including children, and is divided into wards in separate blocks for medical, surgical, infirm, and children's departments under a medical superintendent, with, in addition, a visiting physician, surgeon,

dentist, oculist, pathologist, and four resident medical officers. The total cost of the land and buildings opened in 1902 was half a million pounds.

The Eastern and the Western District Hospitals.

The Eastern District Hospital and the Western District Hospital are intended primarily for acute curative cases, both medical and surgical. There is a medical superintendent with a visiting physician and visiting surgeon. A special feature of the Eastern District Hospital is the wards for the treatment of incipient mental diseases; these wards are regarded as unique in Scotland, and serve the purpose of preventing many patients being sent to asylums. The Eastern Hospital has accommodation for 320 patients; the Western has accommodation for 228 patients.

Barnhill Poorhouse, Springburn.

The Barnhill Poorhouse is utilized chiefly for infirm patients and recurring sick; it has accommodation for 2,000 patients or thereby, with an adequate staff of medical officers and nurses. Its situation is unfortunately the dingiest in Glasgow, surrounded by ironworks.

Glasgow District Asylum, Woodilee, Lenzie.

The Glasgow District Asylum at Lenzie is one of the largest mental hospitals, and, with its succursal establishments, accommodates 1,292 patients. It is built on an estate of nearly 800 acres, and gives ample scope for open-air and curative treatment. It is situated a few miles outside the city, on the North British line to Edinburgh. The sanatorium pavilion is of modern type.

Glasgow District Asylum, Gartloch, Gartcosh.

The Glasgow District Asylum at Gartcosh is a newer building than Woodilee, being opened in 1895; the building is situated about eight miles from the city, within its own grounds, which extend to 440 acres, and its accommodation provides for 812 patients.

Institution for Mental Defectives, Stoneyetts, Chryston.

The Institution for Mental Defectives, Stoneyetts, has accommodation for 345 patients, and is built on the lands of Woodilee Asylum, about two miles or thereby distant from that building.

The parish of Govan comprises a second portion into which greater Glasgow for Poor Law purposes is divided. The burgh of Govan and the burgh of Partick were until recently municipalities independent of Glasgow, but now they are merged. It is these two burghs with Tradeston and Kinning Park which mainly form the parish of Govan, representing the large population of 372,000.

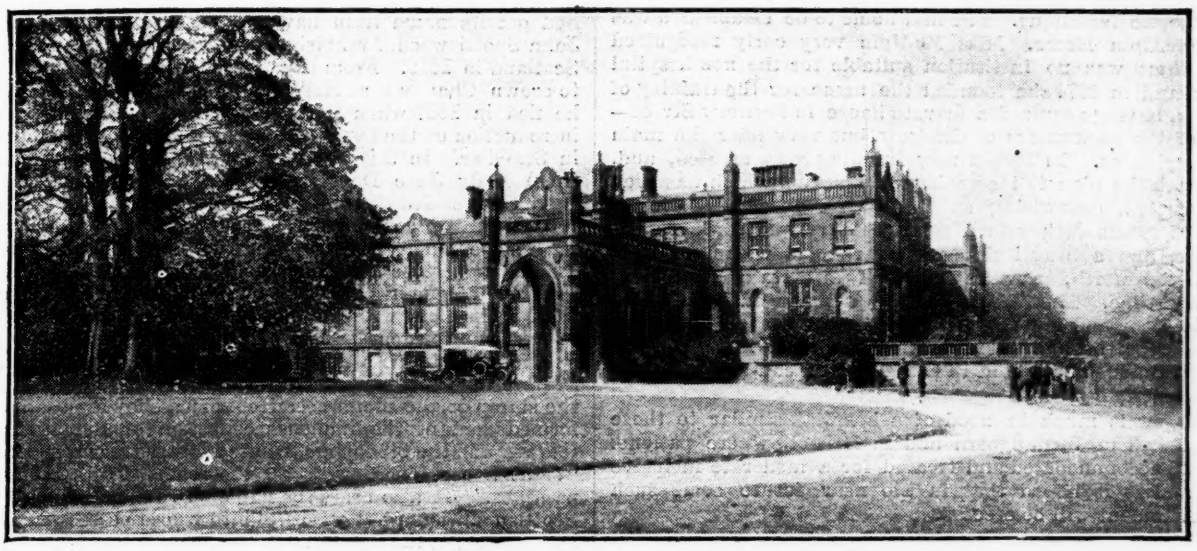
The Southern General Hospital, Merryflatts.

This is the new title of the hospital known for many years as Govan Combination Poorhouse and Asylum. The hospital was founded in 1845 and housed in an old mill in Dale Street, Tradeston. In 1853 it was transferred to Port Eglinton (a location known to few in these days) to a building once used as a cavalry barracks for the southern district of Glasgow. The present building was erected in 1872 in the most westerly portion of the parish on the south bank of the river lower down than the great shipbuilding yards of the Fairfield Company. There are about 2,000 beds in the hospital, with wards for mental defectives, chronic and incipient insanity cases, epileptics, patients suffering from venereal and skin diseases, maternity cases, as well as for the ordinary medical and surgical patients. The medical staff consists of a medical superintendent and three assistant medical officers, with a large nursing staff. There is a small convalescent home for children in the island of Bute.

GLASGOW ROYAL MENTAL HOSPITAL, GARTNAVEL.

The Glasgow Royal Mental Hospital is worthy of special mention, though it is in a sense a private hospital; it accommodates approximately 500 patients, whose rates of board vary from £58 to £600 per annum. The building is a large one, in the western portion of Glasgow. The average number of patients treated annually for the last four years was 492. There is ample scope for outdoor exercise and recreation, a golf course, tennis courts, croquet lawn, and a curling pond being provided. The laboratory of the Western Asylums' Research Institute is situated within the hospital grounds, and research into the etiology and results of mental diseases is carried on there.

The history of the asylum, as it used to be called, is of great interest. It owes its origin at the beginning of the nineteenth century to the efforts of one gentleman, Robert McNair, of Belvidere, Glasgow. As a director of the town's poorhouse he was horrified by the wretched condition of the insane, who, whatever their social position, were kept in "the cells" at the poorhouse on the banks of the Clyde. After years of work he saw the foundation-stone of the "Glasgow Asylum for Lunatics" laid in 1810. For many years this institution was regarded as a model asylum. The present Royal Asylum, or, to give its new title, the "Royal Mental Hospital," was opened in 1843. The building is not now of the most modern type, but in those days it was in advance of its time. The physician-superintendent is University Lecturer on Insanity: the clinical field is very large.



Photograph by] ERSKINE HOUSE. *[T. and R. Annan and Sons.*

THE PRINCESS LOUISE SCOTTISH HOSPITAL FOR LIMBLESS AND DISABLED SOLDIERS AND SAILORS, ERSKINE.

It is intended that a special excursion will be organized to visit the Princess Louise Scottish Hospital for Limbless and Disabled Soldiers and Sailors at Erskine on one of the afternoons of the meeting in July. This hospital is situated on the banks of the Clyde, about ten miles from the centre of the city. Erskine House is a stately mansion, with extensive grounds sloping to the left bank of the river. Thanks largely to the generosity of Sir John Reid, Deacon Convener of the Trades' House of Glasgow, the mansion was acquired for its present purpose. It was opened in 1916, and it is due to the untiring efforts and influence of the President-elect of the Association, Sir William Macewen, that the hospital has become the efficient complete organization which it now is. It first serves the purpose of a preparatory hospital for the readjustment of stumps and their surgical demands; secondly, it provides for the manufacture and fitting of artificial limbs and appliances, and teaches the men their full and proper use; in the third place, the men are trained in trades suitable to the degree of their disablement. The workshops for the manufacture of artificial limbs and provisional limbs have already provided 10,000 limbs. The hospital has been recognized as a Government training centre for the various trades. At the present time 110 men are undergoing training, and 126

men have already completed their training and are working in various parts of the country. There is accommodation for 400 men, half of the beds being in temporary premises. There is a well-equipped operating theatre and *x*-ray department. The surgical staff is drawn from the surgeons of the voluntary hospitals of the city, who visit the hospital at regular intervals.

NURSING HOMES IN GLASGOW.

Any notice, however imperfect, of the medical institutions of Glasgow would be incomplete without a reference to the very numerous and well-equipped private nursing homes. As in other cities, these homes are generally the private property of ladies who are trained nurses and who have gathered around them adequate and efficient staffs. These homes have been established in private houses which have been altered to suit their new purposes. Many of the large terrace mansion houses of the west end of Glasgow have been acquired, and, generally speaking, have fulfilled the purpose of a private hospital admirably. All the nursing homes have completely equipped operating theatres, and the surgeons of Glasgow carry out their private work with perfect confidence in the efficiency of the nursing and in the completeness of the aseptic technique. The first home to be established was the McAlpin Home. Miss McAlpin very early recognized that there was no institution suitable for the non-hospital class, and in 1874 she founded the home for the training of nurses, having acquired a private house in Renfrew Street—one of the backwaters of Glasgow, but very near the main thoroughfares. In 1908 a new building was erected, and, although the plan is incomplete, the portion which has been constructed, comprising as it does an excellent series of private rooms each with a small balcony and southern exposure, and a beautiful operating theatre with roof light from the north, provides in itself a private hospital of modern type. The McAlpin Home is managed by a board of directors, and is not run for profit. Any surplus accruing is used for the building extension fund. It is the largest establishment of its kind in Glasgow, and can accommodate 50 patients.

Glasgow is much in need of a hospital, similar to those established in Birmingham and in Bristol, where patients may be accommodated and treated for a moderate inclusive fee, and it is hoped that in the near future some such establishment will be erected.

Nova et Vetera.

SIR ROBERT SIBBALD'S LIBRARY.

SIR ROBERT SIBBALD died in 1722 in his 81st year. He was a nephew of Sir David Sibbald, knight-baronet of Rankeillour in Fife, and keeper of the great seal under the chancellorship of the Earl of Kinnoull. He was born in Edinburgh in 1641, but went to school in Cupar, Fife. In 1651 he was in Dundee with his parents when that city was besieged by Monk, and he narrowly escaped with his life. He was then sent to the High School of Edinburgh and had five years in the university there; he was studying theology at the time, but he changed to medicine for the reason that he "preferred a quiet life not engaged in factions of church and state." That he might "see the world and know men," he studied at Leyden and took the degree of M.D. there in 1661, and he was also at Paris and Angers.

He returned to Edinburgh to practise medicine in 1662; in 1667 he, along with Dr. Andrew Balfour, instituted a botanical garden;* he was chiefly instrumental in founding the Royal College of Physicians of Edinburgh in 1681, and became its President in 1684; in 1682 he was appointed physician to Charles II and geographer for Scotland; in the same year he was knighted by the Duke of York; and in 1685 he was made first professor of medicine in the university by the Town Council. He was elected a member of the College of Physicians in London during the short period of his practising there in 1686. In 1697 he presented his natural history collection to the university; but his magnificent library was disposed of by sale in 1723.

* See BRITISH MEDICAL JOURNAL, 1909, i, p. 908.

The Catalogue was prepared in 1722, and the title-page is as follows:

"Bibliotheca Sibbaldiana: or a Catalogue of Curious and Valuable Books: Consisting of Divinity, Civil and Ecclesiastical History, Medicine, Natural History, Philosophy, Mathematicks, Belles Lettres, &c. With a curious Collection of Historical and other Manuscripts. Being the Library of the late Learned and Ingenious Sir Robert Sibbald of Kipps, Doctor of Medicine. To be Sold by Way of Auction, on Tuesday the 5th of February 1723, at his House in the Bishop's-Land in Edinburgh; where Placards will be affix'd. The Time of Sale is to be from Two of the Clock to Six in the Afternoon. The Books may be seen Eight Days before the Auction. Catalogues are to be sold for a Sixpence each, at William Brown's, and most of the Booksellers Shops in Edinburgh, and at the Place of Sale. Edinburgh, Printed in the Year MDCCXXII."

The "Conditions of Sale" contained some curious clauses; for example, No. IV reads: "They who buy Books to the Value of 10 shillings sterl. shall have the Sixpence they paid for their Catalogue, returned, or discompted to them." No. V, too, reads: "The Books (not otherwise expressed) are supposed to be perfect; but if any of them appear to be otherwise before they are taken away, the Buyer shall have his Choise either to take or leave them."

The Bishop's Land, where this historic sale took place, was a famous edifice on the north side of the High Street, which had got its name from having been the town residence of John Spottiswood, Archbishop of St. Andrews and Primate of Scotland in 1615. From this house the Archbishop had gone to crown Charles I at Holyrood in 1633, and from this house he fled in 1637 when the Scottish people rose against the introduction of the liturgy and Jenny Geddes threw her stool in St. Giles. In this mansion, too, lived (but after Sibbald's time) Lady Jane Douglas, heroine of the Douglas cause; there also resided the first Lord President Dundas, and there his celebrated son, Henry Viscount Melville, was born in 1741, some nineteen years after the sale of the Bibliotheca Sibbaldiana. The tenement was destroyed by fire in 1814.

The catalogue has 140 pages and contains the titles of about 5,400 books along with those of 114 historical manuscripts and 33 miscellaneous ones. The particular copy of the catalogue in the writer's possession is finely bound in calf and has 24 pages of plain paper included at the end. The book bears the stamp of the Bibliotheca Heberiana, showing that it once formed part of the immense collection of Richard Heber (1773–1833), the bibliophile, whose literary treasures occupied "eight houses, overflowing all the rooms, chairs, tables, and passages." It also bears the name "D. Laing," probably the Scottish antiquary (1793–1878) into whose possession it may have passed at the time of the dispersal of the Heber Libraries (1834–35). Its special value is in the fact that the prices the books fetched are marked in on one margin of each page in ink in a contemporary hand, whilst on the opposite margin are here and there faint pencil notes of prices which do not always come up to those on the other margin. The conclusion would seem to be that the catalogue belonged to a bidder at the sale who did not always secure the treasures he was trying for. One can thus almost reconstruct the progress of the sale in some of its details.

The historical MSS. were acquired by another Edinburgh library, as a written note on one of the blank pages at the end of the catalogue records: "Sold all the Manuscripts att £260, bought for the Library of the Faculty of Advocates." From the wording of this note it might almost be concluded that the particular catalogue belonged to William Brown or to Gavin Drummond, "Booksellers in Edinburgh and Managers of the said Auction." If so, the pencil prices may have been commissions undertaken for customers at a distance. It is interesting to observe that amongst the MSS. thus disposed of were "Memoirs for Compiling the History of the Royal College of Physicians at Edinburgh" by Sir Robert Sibbald himself. This was printed in 1837. "Opera Philosophica" and "Poemata," both by George Sibbald, also appear among the MSS.; these were the work of Dr. George Sibbald, the medical uncle of Sir Robert, who advised that he should be suckled for two years because his older brothers and sisters "had died hectic." There were also in MS. "A Description of the Islands belonging to the Crown of Scotland," "Collection of Papers and Informations, in Order to the Description of Scotland," "Provinciae Edinburgenae Descriptio," and "Chronicon Melrossense"; these all remind one that Sir Robert had been appointed in 1682 "Geographer of Scotland." Any observations on the medical books and other bibliographical treasures disposed of at this sale two hundred years ago must be deferred to some other occasion.

J. W. B.

British Medical Journal.

SATURDAY, JUNE 3RD, 1922.

THE GLASGOW MEETING.

THE ninetieth annual meeting of the British Medical Association will be held at the close of next month in Glasgow, under the presidency of Sir William Macewen, F.R.S., Regius Professor of Surgery in the University of Glasgow. The Association is fortunate alike in its meeting place and in its president. Glasgow is a great centre of medicine, an ancient university town, and the magnitude of its commerce and shipping has earned for it the title of the second city of the Empire. Sir William Macewen's renown as a scientific surgeon and clinical teacher is world-wide; his name and work are part of the history of modern surgery. An article on the medical institutions of Glasgow appears at p. 883 this week, and a full account of the arrangements for the forthcoming meeting is published in the SUPPLEMENT.

Thirty-four years have passed since the British Medical Association met in Glasgow. The President then was Professor (afterwards Sir William) Gairdner, who, in opening his address to the Association on "The physician as naturalist," remarked that "as the healing art is probably the most cosmopolitan of the arts, so Glasgow is, beyond all doubt, as regards its commerce and its varied industries, one of the most cosmopolitan of cities." These words are as true to-day as they were in 1888, and the thesis sustained by the President of that year is not less applicable to the present time. His argument, in brief, was that tradition has demanded that the healer or physician of the highest class should also be in a very real sense of the word a naturalist, a man of science; that it is his prerogative to be trained and exercised after the best manner and according to the most thorough discipline of the science of his age; and that he has been, and should be, looked up to as a healer or physician chiefly in proportion to the confidence reposed in him as a naturalist—that is, a humble, reverent, and exact follower and student of Nature. Passing then from historical considerations, Professor Gairdner discussed certain defects (some of them still visible) in the system of medical education, and concluded that although the physician could never again become what he was in the early ages—the sole or chief representative of physical science—he must always be, and should become more and more, a man trained in its discipline and familiar with its resources. As the years pass and science advances the justness of this view becomes more and more plain.

In 1888 the Address in Medicine was given by Dr. (now Sir) Clifford Allbutt, then practising in Leeds; he dealt with one aspect of a subject in which all through his great career he has continued to show interest—namely, what may be briefly described as the application of the conception of evolution to the study of disease. The title of his address was, in fact, "On the classification of diseases by means of comparative nosology." The Address in Surgery was given by Sir George Macleod, and Dr. William Macewen (as he then was) gave an address on his recent investigations in surgery, dealing with the surgery of the brain and spinal cord. This was described in our columns at the time as "in many respects the most remarkable contribution to surgical literature which the present day has produced"; and again, that it marked "an epoch in surgery, the initial stage of a branch of our art obviously destined to a glorious and beneficent future." After his address Dr. Macewen gave a demonstration of cases so remarkable that it alone would have sufficed to render the Glasgow meeting of 1888 memorable in the annals of surgery. Many of the patients whose cases had been described in the address were presented and their demonstration greatly interested the many surgeons who attended; perhaps the most remarkable case was that of a boy in whom the whole shaft of the humerus had been re-formed from grafts; the case is, we believe, well known to surgeons of to-day who take an interest in the history of orthopaedics. In recent years clinical and laboratory demonstrations have come to fill a larger place in the work of the Scientific Sections; and at the Association's second visit to Glasgow the afternoon sessions will be devoted to this purpose, thus following the plan so successfully adopted at Cambridge in 1920 and at Newcastle last summer.

The Sections in 1888 numbered twelve; this year there are nineteen. As will be seen from the programme printed in the SUPPLEMENT, many topics of interest and practical importance are set down for discussion by the Sections at Glasgow; in choosing them special heed has been paid to treatment, both medical and surgical, and to the problems of causation. In the Section of Medicine discussions on renal disease, on exophthalmic goitre, and on degenerative diseases of the liver, will be opened by a leading authority in each subject. The Section of Surgery for its principal debates has selected cholelithiasis, splenic and pituitary diseases, and non-malignant affections of the colon. In the Section of Pathology, Professor Fibiger of Copenhagen will introduce a subject with which his name is identified—the origin of cancer in relation to specific forms of irritation; the second morning will be devoted to animal and vegetable pathology. Another aspect of the comparative study of diseases in plants and animals will be considered by the kindred Section of Microbiology, whose varied bill of fare ranges from the bacteriology of influenza to the mutation of species, and whose afternoon demonstrations include one of leishmaniasis by Sir William Leishman. Psychotherapy and the treatment of neuro-syphilis are the main topics before the Section of Neurology and Psychological Medicine; and the Section of Ophthalmology will discuss optic atrophy and heterophoria. Stillbirths and neonatal deaths has been chosen for discussion by the Section of Obstetrics and Gynaecology, each aspect of the problem being brought forward by a representative worker; the second and third mornings are set apart for independent papers, principally on treatment. The Section of Public Health has spread its net wide, and profitable debates may be expected. These eight Sections—a larger number than heretofore—will meet on each of the three days, July 26th, 27th, and 28th. Five Sections will meet on two days each—Dermatology, Diseases of Children, Physiology, Industrial Diseases and Forensic Medicine, Radiology and Electrology. Of these the second and third have arranged a joint session to discuss rickets from the clinical and physiological sides; and the fifth will discuss deep x-ray therapy and the value of gas inflation in x-ray diagnosis. The remaining six Sections, each meeting on one day, are Anatomy, Anaesthetics, Laryngology, Otology, Tuberculosis, and Medical Sociology. The last named Section, it will be noted, proposes a debate on alcohol as a beverage in its relation to certain social problems.

The Annual Representative Meeting will open on July 21st. Here the parallel with the earlier Glasgow meeting fails, since the Representative Body is of more recent birth. The difference serves only to emphasize the development of the British Medical Association along lines already laid down in 1888, when, in the words of the late Dr. Farquharson, M.P., seconding the

adoption of the report of the Parliamentary Bills Committee, it had already advanced much further than "the scientific picnic state . . . and . . . become a great and important engine for upholding the honour and interests of the profession." For it may safely be asserted that no body less broadly democratic and representative in character and composition could hope to deal effectively with the work that lies before the Representative Body at Glasgow. That the promise of earlier times has so far been amply fulfilled is evidenced by the Annual Report of Council (published in the SUPPLEMENT of May 6th). The conditions of future progress remain to be determined, and will be influenced for some time to come by the decisions of the Representatives on the three main issues with which they have to deal—namely, the development of hospital policy, the development of medical services under the National Insurance Acts, and the maintenance of the accepted standards of professional secrecy under the pressure of an increasingly complex social system. All these are questions of the most vital importance to the future of medical practice in this country, and have been and are matters of keen controversy within the profession. They are also generally recognized as matters of immediate public concern, and it is this last feature which gives them peculiar importance. It is because the problems are pressing, and because rival solutions have already been suggested, some of them inimical to the standards which the Association exists to defend, that an immediate decision would seem to be essential. The Association has before it the double task of uniting the medical profession in support of a definite policy and convincing a critical and impatient public that that policy is governed by broad consideration of the common good, and not by the narrower dictates of professional interest.

As regards hospital policy, the Representative Body is not asked to come to a decision without ample opportunity for consideration. The report on the hospital policy of the Association (published in the SUPPLEMENT of February 25th) has been fully discussed in the Divisions and at the conferences of representatives of hospital staffs convened by the Association; it has excited also a lively correspondence in our columns. The complementary report on municipal hospitals (SUPPLEMENT, May 6th) is based on the principles adopted in 1921 at Newcastle in connexion with Poor Law infirmaries. Similarly, the matters of resistance to the encroachment of approved societies upon the position won in 1911 and apparently again to be contested, and of general approval of the continuance and improvement of the system of medical benefit under the National Insurance Acts, have already been dealt with by that large part of the profession most directly concerned. The Representative Body is now asked to set the seal of professional approval upon the policy laid down by the representatives of insurance practitioners. In connexion with professional secrecy the Council offers a modification of the resolution of the Newcastle meeting, designed to meet the difficulties that have emerged in giving practical effect to the original decision. One other subject of more than ordinary importance, though of a different kind, will come before the Glasgow meeting—the consideration of certain changes in the regulations of the Association necessary to give effect to the modification of its constitutional machinery decided upon last year at Newcastle. Of these, the provisions for the incorporation of Overseas Branches and the recognition of Federal Committees are of special significance, marking as they do the successful adjustment of a difficulty which had threatened the efficiency of the Association overseas.

So far we have spoken of the scientific and medico-political sides of the forthcoming Annual Meeting. After work, play. A glance at the list of entertainments and other functions will show that the social side also is amply catered for. An attractive programme has been drawn up for each day, in accordance with the traditions of Scottish hospitality; and, besides excursions to places of interest in and near the city, members will be given opportunities to visit the beautiful West Highlands, to play golf, and to indulge in other outdoor sports.

GLYCOSURIA AND OBESITY.

A GOOD example of the study of beginnings of disease by combined clinical and laboratory methods, and a good example also of team work, is afforded by some recent researches in the physiological laboratories of the Medical College, Calcutta. The team in this case consisted of the professor of physiology, the assistant professor, and three demonstrators.[1]

The stimulus to institute a research is the existence of sufficient general information to show that there is a problem awaiting solution and to define its terms. In this instance the stimulus was afforded by the knowledge that diabetes was excessively common in India, especially on the eastern side—in Bengal, Orissa, and Madras. It was common knowledge also that the condition was far more prevalent among the well-to-do sedentary classes than among manual workers. It was so common that a Bengali said to one of the investigators, "A man is no gentleman if he does not pass sugar by the age of 40," just as in this country, when the habits of gentlemen with regard to sobriety were different, gout was exceedingly common among them in early middle life. The next general observation was that the Bengali gentleman who eventually became glycosuric was particularly apt to become obese while still young. "How often," the writers say, "have we seen students pass out from this college normal so far as the amount of adipose tissue present is concerned, yet in a few months or so many return almost unrecognizable on account of the mass of fat accumulated."

On commencing their investigations it was found that the average percentage of sugar in the blood of Bengali was 0.13, as against an average of 0.08 for Europeans, and that the percentage was higher (0.15) in the fat indolent classes than in the lean working classes, in whom it was 0.125. The sugar tolerance of the working classes proved to be high, whereas the fatter and flabbier the individual the lower his limit of tolerance. It was next ascertained that, apart from the tendency to fat deposit in the tissues there were personal variations in sugar tolerance: even a fat individual might show a high tolerance and a lean one a low. In those possessing a high carbohydrate tolerance the sugar content of the blood remained remarkably constant, but if the tolerance was low the amount of sugar in the blood was easily raised. Three classes of individuals were met with: first, those in whom the sugar content of the blood rose considerably on glucose ingestion, in whom the threshold of the kidney for sugar excretion was at a high level; secondly, those in whom the sugar content of the blood was about normal but who, on ingestion of glucose, developed glycosuria without any marked rise in the blood-sugar level; and, thirdly, those who developed glycosuria on ingestion of glucose without any rise in the blood sugar. It is conjectured that in the first class the glycogen-forming function of the liver has reached its limit while the kidney threshold for sugar excretion is at a high

[1] *Indian Journal of Medical Research*, vol. iv, p. 1, and vol. vi, pp. 485 and 503. Observations on the Sugar of the Blood and the Sugar in the Urine in Varying Conditions of Health in the Bengali. By Lieut.-Colonel D. McCay, M.D., M.R.C.P.Lond., I.M.S., Professor of Physiology, Medical College, Calcutta; Assistant Surgeon Rai Bahadur Satish Chandra Banerjee, L.M.S., Assistant Professor of Physiology; Assistant Surgeons Lal Mohan Ghosal, L.M.S., Madan Mohan Dutta, L.M.S., and Charubrata Roy, M.B., B.Sc., Demonstrators, Physiological Department, Medical College, Calcutta. The papers have been collected in a volume entitled *Diabetes in India*, published by Thacker, Spink, and Co.

level; that in the second class the glycogenic function of the liver is more efficient but the kidney threshold is lower; and that in the third class the glycogenic function of the liver is normal but the kidney threshold is low.

It appears that in general the plane of carbohydrate metabolism is higher in the Bengali than in the European, since the lean hard-working coolie, though his average blood sugar is high, has only just sufficient for his daily requirements. Little or no fat is deposited in his tissues and the liver is never saturated with glycogen. Each individual has narrow personal limits within which the sugar concentration of the blood varies, but in different individuals the limit may vary widely. There are similar individual variations in the kidney threshold, and they are independent of the glycogenic powers of the liver or the oxidative processes of the tissues.

The authors call particular attention to some observations showing that the level of concentration of sugar in the blood may, within a wide range, be independent of the kidney threshold. Thus glycosurics may be met with whose threshold is high—the usual condition in the fat, overfed classes; in others, again, it is low, and some individuals have lost the power of storing sugar and of converting sugar into fat. Again, there are individuals in whom the permeability of the kidney to sugar is excessive owing to oxaluria, gout, or stone. In the healthy person, in potential diabetics, and in actual diabetics alike the ingestion of glucose is always followed by an increase of the sugar in the urine, whether the blood sugar increases or not. Finally, kidney disease may prevent glycosuria even when marked hyperglycaemia up to 0.86 is present. Such individuals are hyperglycaemics without glycosuria; they seem to go in jeopardy of sudden death from coma.

In discussing the onset and march of glycosuria, the authors find it impossible to resist the conclusion that in otherwise healthy individuals permanent glycosuria can be caused and maintained by overfeeding with carbohydrates. They do not believe that this only occurs in individuals who are really not absolutely healthy, but rather that even the healthiest show some degree of failure to use carbohydrates. In other words, their view is that the normal human organism is inherently diabetic.

Having observed that a tendency to fat deposition appeared to represent a pre-glycosuric stage, they decided to estimate the fat in the blood in these cases and note the effects of administration of glucose. Their observations lead them to believe that the fat formation goes hand in hand with, and is due to, hyperglycaemia. So long as fat formation can keep pace with the hyperglycaemia glycosuria is avoided. When the fat formation is overtaxed, intermittent glycosuria supervenes, and later, when the fat-forming powers fail altogether, the glycosuria becomes permanent. Then the patients begin to waste. At this point the authors see another pathological factor intervening. Though the exact nature of this pathological factor remains unknown, they believe it to be related to a gastro-duodenitis which leads to some damage to the pancreas, whose internal secretion is thereby impaired.

The problem of coma as a cause of death in diabetes has been carefully studied. In the Indian type of coma signs of acidosis are usually wanting or are only slight in degree, and the terminal coma is almost invariably uraemic and accompanied by retention of nitrogenous waste products. The authors believe that in this respect coma as seen in Indian diabetics differs from that met with in Europe. But here they are in remarkable agreement with the views of Marcel Labbé, who considers that in the severest forms of diabetes some derangement of protein metabolism is added to the carbohydrate disturbance. This coincidence of opinion is worthy of note. It opens up the important question whether there is indeed a special coma peculiar to diabetes.

In treatment a plan of a severely restricted diet, with occasionally total carbohydrate starvation, was adopted. Complete starvation, as introduced by Guelpa in 1910 and popularized by Allen, was not resorted to. When the urine had been rendered sugar-free and the blood-sugar level had fallen, a process of gradual re-education to tolerance of carbohydrates was commenced. The mild type of glycosuria prevailing in India gave flattering results. In the few cases where nitrogenous metabolism was disturbed the treatment did not avert a fatal termination; these were doubtless instances of that variety of which Marcel Labbé has said impressively, "Nothing cures them."

Lieut.-Colonel McCay and his "team" are to be congratulated upon a very valuable contribution to our knowledge of the troubles associated with disturbance of carbohydrate metabolism, commonly called diabetes.

INSANITY AND RESPONSIBILITY FOR CRIME.

THE trial of Ronald True for the murder of Olive Young, and his unsuccessful appeal against conviction, provide material of considerable medico-legal interest and importance, owing to the extension of the McNaughton rules which was laid before the jury by Mr. Justice McCardie, and the full discussions which took place in both courts on the principles governing the relation between insanity and responsibility for crime.

Since 1843 the courts, where the defence of insanity is raised, have been guided by the ruling, the operative words of which are as follows: "To establish a defence on the grounds of insanity it must be clearly proved that at the time of committing the act the accused was labouring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing what was wrong." It has long been recognized that this definition does not cover all the cases in which the general sense of the community would hold that the accused should not be considered responsible, since it is well known that a person may be admittedly insane and yet capable of appreciating the nature and quality of his acts and of distinguishing between right and wrong. A good instance was afforded by the lunatic Ware, who, after killing a fellow inmate in the asylum with an iron bar, climbed on to a roof, threatened everyone who approached him, and refused to come down until he was promised freedom from punishment. In this case there was of course no question as to the presence of insanity, but alienists hold that there are other persons equally to be regarded as irresponsible owing to disease of the mind, although they do not present to the layman symptoms conclusive of insanity. In some cases of early general paralysis of the insane, epileptic insanity, paranoia, and commencing senile dementia, there may be impairment of the power of self-control leading to the commission of crime before delusions or other definite signs of insanity are manifested. The courts, however, are, not unreasonably, very chary of admitting irresponsibility in these cases, and thus there may arise a divergence between legal and medical opinion as to the conditions which should be fulfilled before a defence of insanity can be accepted.

With the object of arriving at a standpoint which should be acceptable to both lawyers and medical men the British Medical Association appointed a special sub-committee in 1913 to consider the state of the law with regard to legal responsibility for crime, and the Bar Council, the Incorporated Law Society, the Medico-Psychological Association, and the Medico-Legal Society each nominated two members of this committee. The

report of the committee, which was approved by the Annual Representative Meeting in 1915, recommended the following principle: "No act is a crime if the person who does it is at the time when it is done prevented, either by defective mental power or by any disease affecting his mind, (*a*) from knowing and appreciating the nature and quality of his act or the circumstances in which it is done; or (*b*) from knowing and appreciating that the act is wrong; or (*c*) from controlling his own conduct unless the absence of control has been produced by his own default." It might have been hoped that a recommendation made by a committee so representative of all views would have been followed by legislative or other authoritative action, but the country was occupied with other things, and until this trial the position has remained substantially what it was when the McNaughton rules were first promulgated.

The importance of the True trial comes from the fact that Mr. Justice McCardie definitely conceded the principle for which medical opinion has so long been contending. In his charge to the jury he said: "Even if the prisoner knew the physical nature of the act and that it was morally wrong and punishable by law, yet was by mental disease deprived of the power to control his actions, then the verdict should be 'Guilty, but insane.'" In the Court of Criminal Appeal the Lord Chief Justice said that this was an extension of the McNaughton rules. Counsel for the defence had cited a number of cases in which he submitted that the old rigour of the rule had in fact been relaxed, but the Lord Chief Justice did not consider that proposition to be accurate, and said that in none of these cases had the proposed extension of the rule been acted upon and approved. No further opinion upon Mr. Justice McCardie's action was expressed by the Court of Appeal.

As regards the actual facts of the case, we do not propose to question the justice of the verdict or the upholding of that verdict by the Court of Appeal. Sir Henry Curtis Bennett for the defence claimed that as four doctors had expressed the opinion that True was insane, and the prosecution had not called any medical evidence to rebut these opinions, the jury should have been bound by the medical evidence. It is difficult, however, to accept this view. The medical opinion is only part of the evidence which is placed before the jury, and the jury should arrive at their verdict from a consideration of the whole case. In the last resort the civil authority must be supreme. In non-criminal questions connected with insanity the lay authority exercises the final jurisdiction. The judicial authority under the Lunacy Acts may, and not infrequently does, refuse to sanction the detention of a person in the face of two medical certificates that he is insane. Far less, then, would the medical profession wish, or the community agree, that in criminal cases the final word should be with the medical witness.

Apart from such considerations, we cannot agree that on its merits the medical evidence, while deserving of due weight, was such as to justify sweeping all other considerations aside. True appears to have formed a deliberate intention to commit the crime; he was in want of money at the time, as shown by the fact that he had given a worthless cheque and had left hotels without paying his bills; he robbed the unfortunate woman of her jewellery; he made some effort to conceal the crime by placing pillows in the bed so as to suggest that a person was still sleeping there; he went away and changed his clothes; he invented a story of having left some man quarrelling with the woman; and he took other steps which clearly showed that he appreciated his act and the consequences to him which might ensue. The crime cannot be said to have been the outcome of an uncontrollable impulse in an ill-balanced mind, which the Subcommittee of the British Medical Association sought to provide for when it proposed the addition to the McNaughton rule. Too much importance should not, we think, be attached to the evidences of insanity which medical witnesses noticed after True had been arrested, for a prisoner under a charge of murder is not likely to be in a normal frame of mind, and it is the state of his mind at the time he committed the act which has to be determined. Similarly, in regard to the fact that in his previous life True seems to have been mentally unstable at times could at the most only have strengthened any evidence of insanity at the time when he committed the crime. There are forms of insanity in which the individual may have long lucid intervals, or even apparently quite recover. A manic depressive, for instance, may, after an attack, be, so far as can be judged, perfectly well for years before any symptoms recur. We could not subscribe to the view that if a man has been once certified he is to be held irresponsible for crime for the rest of his life. His acts must be judged on their merits, and if in themselves they show evidence of insanity the fact of the previous attack undoubtedly strengthens the view that he was insane. If, however, he commits a cold-blooded murder with deliberate forethought and motive, and takes steps that a sane man would take to avoid the consequences, the finding of the jury, tested by the Court of Appeal, must be accepted as doing justice in the case.

BOMBAY SCHOOL OF TROPICAL MEDICINE: A BROKEN UNDERTAKING.

WE learn from India that the Government of Bombay has declined to proceed with the project for establishing a School of Tropical Medicine at Bombay. The news is not a little surprising, for the Government of Bombay had very definitely expressed its intention to establish the school, and Sir Dorab Tata had promised to contribute a lakh of rupees a year towards the expenditure which was to be incurred. The Bombay School of Tropical Medicine was to have been opened on April 1st last, and all arrangements were made for this purpose. It was only at the last moment that the Bombay Government determined to cut out of the budget the whole sum allotted to the school, and issued orders that the scheme should not be proceeded with. In consequence Sir Dorab Tata has withdrawn his offer, which was contingent on the Government founding a school of tropical medicine at Bombay. As will be seen, matters had gone very far before the Government of Bombay repudiated the undertaking it had given. They had gone even further than we have so far indicated, for rather more than a year ago the Royal Society was asked to select professors for the chairs of clinical medicine and therapy and of protozoology in the school. The Royal Society, acting through its Tropical Diseases Committee, issued advertisements widely—in this country, in the Dominions, and in America. From among the applicants it selected two, one for each chair. The protozoologist selected was an American, but he, we understand, subsequently, on private grounds, withdrew his acceptance. The successful applicant for the other chair, an Australian (Professor N. Hamilton Fairley), resigned his appointment in Australia to become Tata Professor of Clinical Medicine in the Bombay School. The Government of Bombay has now given him notice that it will dispense with his services on October 31st. The situation thus brought about is obviously most unsatisfactory, and the matter cannot be allowed to rest where it is. When the Royal Society acts for the Indian Government and invites applications for positions on definite terms, the candidates selected assume that a written contract is superfluous. Clearly the Royal Society has been placed in a very false position. At the request of the Government of India it undertook to select suitable persons to occupy the two chairs. With the authority of the Government of Bombay the Royal Society, through its Committee, issued advertisements inviting candidates

to come forward and stating the terms and conditions of the appointment, which was to be in each case for a term of five years in the first instance, "but may be extended by the Government." It is now left in the lurch by the Government of Bombay, which professes to find that it has miscalculated its resources, and is not in a financial position to carry out its bargain. The Royal Society will, we feel sure, have the support of public opinion in any action it may take, and the medical profession in particular will be anxious to see that justice is done to Professor Fairley, if not by the Government of Bombay, then by the Government of India, which cannot absolve itself from responsibility for the acts of the provincial government. We understand that a new central research institute for India may shortly be established, probably at Delhi; this may afford the Government of India a way out of the false position in which it has been placed by the Government of Bombay.

THE ASYLUM SYSTEM.

WE have received a copy of correspondence which has passed between Sir Alfred Mond, M.P., Minister of Health, and Lord Henry Cavendish-Bentinck, M.P., on the subject of a letter of appeal circulated by the National Council for Lunacy Reform with regard to the conditions alleged to exist in lunatic asylums. In that appeal the statement was made that "the Minister of Health has admitted that under present conditions lunacy is treated as a crime rather than as a disease." To this statement Sir Alfred Mond takes exception, and in a letter to Lord Cavendish-Bentinck, who is honorary treasurer of the National Council, he points out that in the speech from which his remarks were quoted his actual statement was "that there was no doubt that the *general public* thought that we treated lunatics as if lunacy were still looked upon as a crime and not a disease." In reply to this letter Lord Cavendish-Bentinck accepts Sir Alfred Mond's denial of the views attributed to him and unreservedly withdraws the statement to which exception had been taken, but he urges the appointment of a Royal Commission to inquire into a system about which he feels the public mind is so seriously disturbed. It often happens that remarks made in the course of a speech are misunderstood by those to whom it is addressed, and when this occurs, as in the present instance, the erroneous impression can subsequently be corrected by the speaker, although it may be difficult to catch it up. It is otherwise, however, with certain criticisms of asylums which are included in the letter of appeal which the National Council for Lunacy Reform has caused to be circulated. The letter is written in such a way that the public would inevitably gather from it that nothing whatever is done in the way of curative treatment for the patients in asylums. An impression of this kind cannot be corrected as can an erroneous quotation. The whole letter, though referring to a system, implicitly casts more serious reflections on the doctors and nurses who are responsible for the care, nursing, and treatment of the insane. However much reforms may be needed in the asylum work we think it regrettable that the view should be circulated that nothing is done for the cure of the insane and that there is an "almost entire lack of curative hospital conditions" in asylums, when in a large number of these institutions every effort is made to restore the patients to health and send them again into the outside world.

THE "DENTISTS REGISTER."

PERSONS who desire to obtain registration or entry under one of the various sections of the Dentists Act, 1921, should make application as quickly as possible. The Act is dated July 28th, 1921, and the fourth subparagraph of Section 1, which prohibits the practice of dentistry by unregistered persons, directs that the section of the Act shall come into operation on the expiration of one year from the commencement of the Act. The application must be made within the interim period allowed. The expression "interim period" is defined in Section 14 of the Act to mean the period between the commencement of the Act and the date on which its provisions prohibiting the practice of dentistry by unregistered persons come into operation. On the average an interval of about two months is found necessary between the time an application is received and the registration effected, and a person who is not registered when the Act comes into force, whether he has made application or not, will come under the operation of the section prohibiting practice. There is, however, power by an Order in Council to extend the interim period for a further period not exceeding two years, but the Minister of Health stated recently in the House of Commons that though the question of such extension was under consideration no statement could at present be made. Further, it is to be noted that Section 14 gives the Dental Board power, on application made at any time within two years of the date of its coming into operation, to allow a person to register if the Board is satisfied that there were valid reasons for the failure to make an application before that date. It is, however, obviously desirable that all persons who desire to be registered should regularize their position at once by sending an application to the Registrar of the Dental Board of the United Kingdom, 44, Hallam Street, London, W.1. We understand that some uncertainty has been felt as to the position of a person already on the *Dentists Register*; it has been asked whether he must register again under the Act, and whether he will henceforth have to pay an annual registration fee of £5. We are informed that any person registered on or before July 27th, 1921, will not be required to register again or to pay an annual fee. Any person who registered on or after July 28th, 1921, will, if he desires his name to be retained on the *Register*, be required to pay an annual fee, which at present is fixed at £5.

FATAL BOTULISM.

HITHERTO this country has escaped any serious prevalence of the form of food poisoning to which the term "botulism" has been applied, but it continues to occur in other countries, and a considerable number of outbreaks have been reported in the United States. The symptoms are sufficiently well marked to make it improbable that the condition would be overlooked; in fact, it presents so close a resemblance to lethargic encephalitis that when the disease first appeared in this country some of the earlier cases were believed to be examples of botulism. The organism has been isolated and an antitoxin prepared, but, so far, little benefit appears to have been derived from its administration in man, although animal experiments have encouraged perseverance in its use. The name given to the disease is due to the fact that the first cases described were observed in Germany, and were associated with the eating of sausages (*botulus*, a sausage). The death rate in true botulism appears to be high, and death may ensue within a few days of eating the contaminated food. An example of the outbreaks which occur in the United States is afforded by one observed by Whiteman and Wilkinson in Cambridge, Idaho, and described in the *Journal of the American Medical Association* for April 29th, 1922 (p. 1278). Seven members of a family, with two guests, shared a meal which included, among other food, greens which had been tinned at home. Of the nine persons who partook of this meal, eight became ill with botulism and six of the eight died; only one of the nine was unaffected. The symptoms were closely alike in every case, but two types of illness were noted—one in which the vomiting was severe and the duration of illness shorter, and one in which prostration was a predominating symptom. Descriptions of two of the most typical cases are given; the early symptoms included dizziness, blurring of vision, and unsteady gait, followed by vomiting; later blepharoptosis, paraesthesia in the extremities, weakness of the arm, leg, and especially neck muscles, dyspnoea, dysphagia, and aphonia were noted in all of the fatal cases. Dilatation of the pupils with sluggishness of the light reflex and Babinski's sign were present, and the knee-jerks were exaggerated. *Post-mortem* examinations were refused by the family. Two months after the onset of the symptoms

one of the surviving patients had fully recovered, but the other was not strong enough to mount a horse unaided. The treatment of these cases was expectant. Ice was sucked when swallowing became difficult, and physiological saline solution was administered subcutaneously and by drop method into the rectum. The survivors were freely purged with half an ounce of magnesium sulphate four times daily; and a mixture of potassium permanganate 1 grain, sodium bicarbonate 1 drachm, and water 6 oz. was given internally four times daily. No specimen of the suspected food or the containers could be obtained for examination. The surviving members of the party stated that they ate freely of all the foods except the tinned greens, and gave as their reason for refusing this that it had a peculiar musty smell and an unpleasant but indescribable taste. Seven tins of food, prepared at the same time and under the same conditions as the suspected greens, were examined, and five showed evidence of decomposition, although *B. botulinus* was not found on bacteriological examination.

THE TRAINING OF THE BLIND.

THE seventh report of St. Dunstan's Hostel and After-Care Organization for Blinded Sailors and Soldiers shows that last year 406 men were receiving training in the workshops and classrooms of St. Dunstan's. In January of this year 15 new cases had to be admitted, so that the work of training blind sailors and soldiers is not ended, and the need for support is still very real. With the completion of the training of a blind man a new problem is presented, that of setting him up in the work for which he has been trained. This work, what is commonly known as "after-care," engages the activities of St. Dunstan's and represents a considerable business, and one that needs the greatest tact and thought on the part of the administrators. The best trained blind man is at a disadvantage in open competition with his sighted fellow worker, so that the careful placing of these blind men where they may best follow their employment, and the tactful observation of them during the earlier years of their activities, present a complex problem. Its complexity is increased by the difficulties in the way of getting suitable shops, houses, or other premises, owing to the present shortage; St. Dunstan's has been compelled to become a landlord on a considerable scale by securing properties in which to establish its men; they are leased or sold on a hire-purchase scheme on reasonable terms. It has nearly 300 men on its rent roll, and 120 are expected to need settlement during the next year. St. Dunstan's buys material wholesale for the settled men, and £18,000 worth of material was so bought last year. It sells the output of the men where necessary, and sold £12,000 worth last year. When so many men are unemployed St. Dunstan's feels a legitimate pride in the fact that there is not a single trained stenographer or telephone operator who has left and is out of work. The report gives a number of extracts from letters received from men settled by St. Dunstan's, and throughout there is a tone of satisfaction in useful work, which is the best testimony to the value of this voluntary effort. It is well worthy of the support of the generous.

INCOME TAX AND LOCUMTENENTS.

FROM time to time we have received inquiries as to whether a medical practitioner was entitled to treat the cost of the services of a locumtenent as a proper deduction for income tax purposes. As a matter of strict legality the point is not free from doubt, and local inspectors have often urged that a locumtenent's fees are part of the total cost of a practitioner's holiday rather than of his professional work, so that in very many cases such payments were allowed only where their necessity arose through the physical unfitness of the practitioner. This distinction has never appealed to us as well founded; prevention is not only "better" but less costly than "cure," and assuming that a practitioner whose health has given way through overwork can claim to deduct a locumtenent's fees during his enforced absence from professional work, it would seem to follow that the same grounds would justify allowance of the expenses where necessary to obtain that holiday which will obviate a breakdown. It is therefore satisfactory to learn that the Board of Inland Revenue is now prepared to agree that expenses incurred by a medical practitioner in maintaining his practice while he takes his annual holiday can properly be deducted in computing his liability under Schedule D. Such expenses, we may perhaps add, would cover not only the cash payment made to the locumtenent, but also the cost of his board and lodging.

POST-GRADUATE COURSE IN PAEDIATRICS.

THE Fellowship of Medicine and Post-Graduate Medical Association has arranged a post-graduate course on diseases of children, to be held from Monday, July 3rd, to Saturday, July 8th. Clinical demonstrations in the various departments will be given at the following hospitals, which have agreed to take part: East London Hospital for Children, Paddington Green Hospital for Children, Victoria Hospital for Children, Queen's Hospital for Children, St. Marylebone General Dispensary. The syllabus for what is aptly called "Children's Hospital Week" will be ready in a few days' time, and copies may be had on application to the Secretary to the Fellowship of Medicine, 1, Wimpole Street, London, W.1. Should a sufficient number of entries be received it is proposed to repeat the short course in general medicine, recently held, during July and August; the dates will be announced shortly. The *Bulletin* for June giving general information on post-graduate work in London is available and copies may be obtained from the Fellowship of Medicine. The next post-graduate lecture at the Royal Society of Medicine will be delivered by Sir William Hale-White on "The clinical symptoms of *coli* infection of the urine," on Tuesday, June 13th, at 5 o'clock.

THE next social evening of the Royal Society of Medicine will be held at the house of the society, 1, Wimpole Street, W., on Wednesday, June 14th. The President and Lady Bland-Sutton will hold a reception at 8.30 p.m., and Dr. T. M. Legge, C.B.E., will deliver an illustrated address on Industry and Art at 9 p.m.

General Medical Council.

NOTES.

Medical and Dental Education.—The one hundred and fifteenth session of the General Medical Council, which concluded on May 29th, has been the longest of recent years. The President's address was reproduced in full in the SUPPLEMENT for last week, and a report of the other proceedings is continued this week. The length of the session was due not so much to the disciplinary cases, though these perhaps exceeded the average in number and complexity, but to the simultaneous completion of several educational and examinational matters which have been occupying the committees. Among these has been the revision of the curriculum in medicine and in dentistry. At previous sessions what might be called second reading debates have taken place, and on this occasion the matter reached report stage. The question of the revision of the medical curriculum arose out of a desire that the preventive aspects of medicine might be more strongly emphasized. It was first approached in 1918, largely, we believe, at the instance of Dr. McVail. The movement for the revision of the dental curriculum was started in the Council in 1914 by Sir Arthur Newsholme, who is no longer a member. It had its origin in the public belief, fostered by unregistered dentists, and not altogether denied by the registered, that the number of recognized dentists was insufficient. In both cases the inquiry went beyond what was originally intended, and the result has been the revision of the whole of the recommendations of the Council on the subject of the curriculum, both for medicine and dentistry. The new regulations will come into effect on January 1st, 1923.

Demonstrations on the Living.—The Education Committee, in connexion with the practical applications of the revised curriculum, brought up a proposal that the teaching of anatomy and physiology should include, as a regular part of the course, a demonstration of structure and function on the

living body. Thereupon Sir Isambard Owen asked what precisely was intended by this phrase, which, he thought, might give rise to misconceptions on the part of the public, and Sir Sydney Russell-Wells confessed that when he first read the passage he thought it related to animal experiments. Sir Donald MacAlister, however, expressed the belief that the man in the street would understand that it was better to demonstrate the action of a muscle on the living rather than on the dead subject. He said that the matter arose because several of the subcommittees which had been considering the subject wished to emphasize the study of the living human body throughout the course of anatomy, and, some of them, throughout physiology also especially in relation to the organs of sense. With a view to removing any possible misunderstanding, an amendment inserting the word "human" was agreed to. The idea, of course, is not new. Many, many years ago the crossing sweeper used to earn a welcome half-crown by allowing himself to be the subject on which students attending the course of practical surgery marked out in blue pencil the incision they would make for some operation upon which the lecturer was discoursing; nevertheless we make no doubt that it will be assumed in quarters where no argument convinces that what is now intended is human vivisection.

Regulations for the D.P.H.—It is a pity that the greater part of the last meeting of the Council was occupied with relatively a minor matter—the method of assessing marks at examinations—so that the report of the Public Health Committee on the new rules for the diploma, upon which a long debate had been expected, had to be introduced and approved within an hour. But there was opportunity for one of Sir George Newman's interesting speeches, in which he always raises a debate to a high level. He did not conceal his satisfaction in the fact that the new rules for obtaining the diploma in public health will virtually exclude all those who do not intend to make the public health service a career, but desire to wear the diploma merely as an ornament. To the objection that they closed the door upon the general practitioner, he replied that it must not be forgotten that the Council by tightening up the general curriculum was aiming to make the general practitioner of the future as well equipped in respect to preventive medicine as was at one time the holder of the old D.P.H. The rules, which gave rise to a long discussion at the last session, appeared to receive general approval on this occasion, and only one objection was expressed, and even this did not command a majority. This was an objection to the interval of two years which is to elapse between the attainment of a registrable qualification and the final examination for the public health diploma.

Midwifery in Indian Universities.—An interesting matter which did not come before the Council, but was considered by the Executive Committee in the course of the session, was the inspection of midwifery teaching in Indian universities. Dr. Norman Walker, who has lately been visiting India, reported that he discovered a number of grievances at the universities with regard to the action of the Council—as, for example, that the communications of the Council were addressed to "the Indian universities," thus grouping all, good and bad, together; that the tone of the communications was peremptory; and that it was not recognized that the methods of teaching practical midwifery in Madras, Bombay, and Calcutta were superior to those of at least some of the schools at home. Dr. Norman Walker dealt with all these matters diplomatically, and his recommendations, which the Executive Committee has adopted, are that the degree of M.B., B.S. of the University of Madras should continue to be recognized, and that the similar degree of Bombay, Calcutta, the University of the Punjab (Lahore), and Lucknow should continue to be recognized until June 30th next, and thereafter year by year upon the receipt of a satisfactory report from an official inspector approved by the Council, and in the case of the last two universities of a statement also by the dean of the Faculty of Medicine containing the nominal roll of the graduates of the year, and a certificate that each of them has fulfilled the Council's recommendations. Dr. Walker believes that it will be possible for each of the Indian universities to show that its regulations for the teaching of practical midwifery are sufficiently in accordance with the recommendations of the Council to enable the Council to recognize their certificates. He has suggested to the Government of India that it should propose to the General Medical Council that the services of Colonel R. A. Needham, Deputy Director-General I.M.S., who accompanied him throughout his tour, should be accepted as those of the approved inspector.

Disciplinary Cases.—The hearing of disciplinary cases by the General Medical Council is usually a pitiable business—the story of careers ruined, at any rate for the time, by some weakness of character which has led the respondent into a course of conduct he quickly learns to regret. Usually, by the time he appears in the Council Chamber the respondent is contrite and promises amendment. This was not the attitude of Dr. Kynaston. As may be gathered from the report of the proceedings in his case published in the SUPPLEMENT, his attitude was confident, and though his cross-examination of the few witnesses called was not perhaps very effective, the examination and re-examination of himself was conducted in a vigorous manner. Dr. Kynaston some years before the war retired from the R.A.M.C. with the rank of major, but was re-employed during the war with the rank of lieutenant-colonel. He has satisfied himself that enlarged tonsils and adenoids can be efficiently treated without operation and has condemned the frequency with which such operations are now performed. He is, of course, entitled to hold these opinions, but exception has been taken to the manner of their presentment. Dr. Kynaston stated that he had sent his resignation from the *Medical Register* to the Council, but the President pointed out to him that he had no power to resign from the *Medical Register*. The charge brought against him by the Medical Defence Union was heard by the Council. It is set out in full in the report in the SUPPLEMENT, and, as will be seen, it resolved itself into an accusation that he had sought to attract to himself patients for his own gain by means of advertising. The Council, after deliberating on the case *in camerâ*, directed the Registrar to erase Dr. Kynaston's name from the *Medical Register*, and the proceedings in the case closed by Dr. Kynaston expressing his thanks to the Council. So the incident ended, but we shall be doing, we imagine, no wrong to Dr. Kynaston if we assume that we have not heard the last of his campaign which at various times has carried him into the lay press. To another case, that of Dr. Robert Bell, the attention of the Council had been called by a committee of practitioners in Warrington. The charge, as will be seen from the full report in the SUPPLEMENT, was that Dr. Bell had for a period of nine months prescribed for and treated a woman suffering from inoperable cancer without ever having seen or examined her, the prescribing and treatment being carried on by means of correspondence with the patient's husband, a person without medical skill or knowledge. From the opening statement of the solicitor for the Council it appeared that when notified of the complaint in due course Dr. Bell took a very high hand and threatened the Registrar with an action for libel. In his evidence before the Council he maintained that the report of a medical man that a case was incurable was a sufficient report, and that by his method of treatment such cases were curable in many instances. Lord Tenterden, chairman of the Battersea General (Antivivisection) Hospital, was called as a witness for the defence, and stated that Dr. Bell had succeeded in cases where others had failed to cure. It will be seen that the Council found the facts alleged proved, and through the President informed Dr. Bell that it took a grave view of the conduct of a practitioner who for gain prescribes for and treats by correspondence, without having seen or examined the patient, without medical evidence as to the actual nature of her complaint, and without securing medical assistance and co-operation in the actual treatment. It, however, postponed taking any action until May, 1923,* when the respondent should be prepared to satisfy the Council that in the interval he had been without reproach in respect of such methods of practice. The Council through its President thanked the Warrington practitioners who had called attention to the case. In another case, that of a practitioner who had been convicted at the Central Criminal Court last September of having unlawfully administered to a woman certain poisons and noxious things with intent to procure her miscarriage, and sentenced to a term of imprisonment, the conviction being afterwards confirmed by the Court of Criminal Appeal, a strongly worded application for leniency was made by the respondent's counsel, Sir Edward Marshall Hall, K.C. Among other points it was stated that a petition to the Council with 5,000 signatures had been received from one of the districts in which the respondent had practised. The Council, however, decided to erase the respondent's name from the *Medical Register*.

* Erroneously printed "1924" in the SUPPLEMENT, p. 215.

An Exchange of Compliments.—There was a pleasant interchange of compliments at the close of the proceedings of the Council. Dr. McVail, whose term of office as Crown representative for Scotland is about to expire, begged that he might have the honour of proposing the last resolution, which was one of thanks to the President. He recalled the fact that the late Sir Robert Morant was present on one occasion during a meeting of the Council and remarked to him afterwards, "That is a body which requires a strong President—and it has got one." Dr. McVail went on to put in a characteristic qualification—that strength in a President tended to autocracy; but he regarded the apparent autocracy of Sir Donald MacAlister as due to the speed of his thinking, which brought him to the only right conclusion ten minutes ahead of the general body of the members. When a session of the Council could be shortened by a single day it meant a saving of some hundreds of pounds, and Sir Donald was not forgetful of the obvious economy of cutting the deliberations as short as was possible consistently with fairness to all concerned. The President, in reply, said that no one appreciated what Dr. McVail had hinted more than he did himself, but any assumption of autocracy on his part was generally made unnecessary by the businesslike spirit of the Council. He paid a tribute to the work done by Dr. McVail in many capacities, and wished him long life and happiness in his retirement.

Acoustics of the Council Chamber.—The Lord Chancellor recently sympathized with the Parliamentary Gallery in their complaints as to inaudibility and illiteracy. Illiteracy does not apply in the case of a learned body like the General Medical Council, but inaudibility is a graver fault. The acoustic conditions at Hallam Street are never of the best, but on this occasion the noise of building operations going on next door, where the home of the new Dental Board is to be, made hearing sometimes almost impossible. Moreover, an afternoon on which extremely important business had to be done was chosen as the very time to do some hammering work on the stone façade of the Council chamber. We do not know of any other legislative or judicial body which works under such distractions.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

National Insurance Bill.

Insurance Doctors' Remuneration.

THE National Health Insurance Bill was read a second time in the House of Commons on May 24th. Sir Alfred Mond said that the measure originated in a recommendation of the Geddes Committee that certain supplementary special grants hitherto paid by the Exchequer, in addition to the statutory grant under the National Insurance Act, should be discontinued, and that the amount should be defrayed out of the Insurance Fund.

Sir A. Mond's Opening Speech.

The sum involved, said the Minister, was about £2,150,000 per annum, made up as follows: £1,700,000, the State contribution towards the cost of medical benefit in excess of the statutory proportion of two-ninths; £100,000, the expenditure incurred by the Ministry of Health on behalf of approved societies and Insurance Committees for the regional medical officers and the index clearance branch; and £350,000, the amount of the State grant to the Women's Equalization Fund, which was set up to assist approved societies in meeting claims due to extra sickness among married women members. The Geddes Committee advised that the amount required should be secured by increasing the contribution in respect of insured persons by a penny a week—a halfpenny by the employer and a halfpenny by the insured person. At the present time when owing to exceptional distress the Government had to raise the contribution for unemployed insurance to figures far in excess of what had been contemplated the Minister felt, as did others connected with National Insurance, that a way should if possible be found to avoid an increase in contributions for Health Insurance. Consequently, a meeting was held of the Consultative Council of Approved Societies; several conferences followed, and the unanimous conclusion was that while the State should no longer find these special grants, some other scheme should be devised to yield the requisite money without increasing the contributions. Hence the present bill. It provided that the total cost of the special Exchequer grant, apart from the Women's Equalization Fund, should as from April 1st, 1922, be a charge on the benefit funds of the societies during the present contract with the medical profession. Sir Alfred reminded the House that he made a renewed contract some time ago on a reduced scale to continue until December 31st, 1923, when it would be subject to review in the light of the conditions then prevailing.

In regard to the soundness of the proposal, he quoted from a report made to him by Sir Alfred Watson, the Government actuary, which had been issued as a White Paper. It stated that in addition to nearly £8,000,000 in surpluses amongst the societies in Great Britain, carried forward at the last valuation, over £6,000,000 in contingencies funds had been accumulated in the societies, and was transferred almost intact to the benefit funds of the societies on January 1st, 1919. In view of these resources the Government actuary held that the extra charge imposed by the bill upon the funds of the societies could be safely borne, subject to the time limit of December, 1923. The bill would not in any way affect the operation of schemes of additional benefit recently declared by the societies and branches. This proposal having been put forward by the approved societies, he accepted it as a very generous offer. Even under this arrangement the surplus would stand well over £12,000,000 above the actuarial liabilities of the societies. An alternative suggestion had been made that the money should come out of the reserve value of the societies, but to that there were serious objections. Under the present proposal the money which would be paid for these medical benefits, and would come to the funds of the approved societies, would be treated in the general account in the same way as any other benefit payment. These payments would automatically carry with them two-ninths as State grant which would be created when the time came, and would be placed to the surplus value. Sir Alfred Mond went on to state the financial objections to a sinking fund arrangement. The societies would, he said, lose the State grant of about £800,000 or £900,000 which they were keeping under this bill. There would be no money towards the redemption of the Sinking Fund till the end of next year, the fund would default in payment of interest, and its redemption would be postponed for many years after 1933, the date at present estimated for.

Touching administration, Sir Alfred Mond said he understood there was some apprehension in the minds of the medical profession that the bill might make some change, or enable a change to be made, in the arrangements for the control of medical benefit. "I have already said," he continued, "in answer to questions in the House, that there is no word in this bill which modifies the existing statutory provision for the control of medical benefit, and I take this opportunity of formally repeating that statement. Having regard to the provision in this bill for contributions in relief of State expenditure from the surplus funds of approved societies, I think that it is no more than fair and reasonable to-day that I shall give the societies an opportunity of expressing their views before any new terms of service are made with the panel practitioners on the expiry of the existing contract of service. But the responsibility for accepting those contracts rests and will continue to rest with the Minister of Health. A question has been raised as to the possible implications in the words, 'Subject to such conditions as might be prescribed in Clause 1, Subsection 1(*a*) of the bill.' These words are intended solely to provide for the detailed conditions which may arise in the field of administration. They are certainly not to be used in any way inconsistent with the principle which I have just been enunciating."

Coming to the expenditure of £100,000 by the Ministry of Health on behalf of the approved societies upon regional medical officers and for the Index Clearing Branch, the Minister thought that no one would cavil at this; the additional officers saved time and a very large amount of money by getting people off the books. In regard to the Women's Equalization Fund he said that the original idea was that it would be dangerous to take women into the approved societies on the same basis as men, and that an Exchequer grant was necessary. The Exchequer grant of £350,000 to this fund disappeared in January last, but there was a surplus of about £2,000,000 to meet any deficiency that might accrue. On an interpolation by Dr. A. C. Farquharson that a considerable reduction had recently been made in the cost of panel treatment, the Minister said that the medical fees were still very much higher than in the time of the 1918 Act. He was pleased that he had got the profession to reduce their fees somewhat, but they still left the necessity of proceeding under this bill. When a more stabilized condition obtained he hoped it would be possible to get more to the normal state of things under which the Act was framed. The Minister explained, lastly, Clause 3, intended to meet the cases of persons who had fewer than twenty-six contributions credited to them, and therefore could not draw a cash benefit in the following twenty-six weeks. Power was being taken under this clause until December 31st, 1923, to enable the department to make such payments to approved societies as would enable them to pay cash benefits to those who would otherwise not be entitled to them, owing to default from loss of employment. This money would be drawn from a fund of nearly £2,000,000, which was made up of unclaimed contributions. Under the Act such defaulters were entitled to medical benefits but not to cash benefits. The measure would enable them to have both.

Debate.

Mr. J. H. Thomas criticized the bill, though he did not wish to divide the House on the second reading. He thought that there was obscurity as to the source from which the societies should provide the extra money required for medical benefit. He wanted this to be clearly defined. He also had the feeling that the proposed action might tend to discourage economy by approved societies. Moreover, he wanted an assurance that in 1923, when the situation was reviewed, the approved societies would have a voice in determining the new arrangement between the doctors and the insured people. He did not ask that their voice should be independent of that of the Ministry of Health, but held that they should also be entitled to say something definite at this period.

Sir Alfred Warren, speaking on behalf of the Consultative Council, said that it had gone into the whole subject exhaustively before deciding for the present bill. The Council in shouldering the additional burden of £1,760,000 per annum for medical benefit thought it ought to be materially improved, or that if it could not be improved it should be got rid of altogether,

other arrangements being made. The Minister of Health had already promised that at the end of 1923, when it was proposed to enter into new agreements with the medical profession, the approved societies should be consulted. He submitted that the societies should then come into some reasonable connexion with the medical profession, a connexion which hitherto they had never had. He asked the Minister to reaffirm his determination in this respect because already the medical profession were taking exception to it. In an interview not long back with the Minister's chief advisers an attempt was made to get that promise withdrawn. He held in his hand an extract from the remarks made at that meeting by the Secretary of the British Medical Association, in the course of which that gentleman said: "Ministers may come and Ministers may go, but we know from what we have seen of the approved societies that if you give them an inch they will take an ell, and we are not prepared to give them that inch." That was a remarkable statement to make. If it were true the approved societies could have said something very much stronger, very much more pungent regarding the medical profession. When had the profession given them an inch? Unless there were a deliberate promise and that promise were kept that the Friendly Societies would be taken into consultation at the end of 1923, they would put up the strongest fight of their lives to ensure that not one farthing more could be taken from their funds.

Mr. Cautley thought that the proposal in the bill was not justified by any reason the Minister had given. He quoted from Sir Alfred Watson's report that the surplus of each society was the property of the members of the society. He was not satisfied that the money could not be raised by some prolongation of the redemption period or of the reserve value from when the original Insurance Act was filed.

Major Mackenzie Wood moved the rejection of the bill. He held that the matter was of importance because the bill transferred from the Exchequer to the approved societies a liability to pay something like £3,500,000, taking the two years together. It was also of importance because in his opinion it raised the whole question of the future relationship of the doctors to the approved societies. He insisted that the Consultative Council did not necessarily represent the approved societies. As he understood the subject the Consultative Council gave the somewhat qualified agreement that they did on the express undertaking by Sir Alfred Mond that when the present agreement with the doctors ran out at the end of next year the approved societies would be consulted as to any new agreement. The doctors, so far as he knew, repudiated that. They said that the Minister could make any agreement he liked with the approved societies, but they as doctors would have nothing to do with negotiations with approved societies. More light should be thrown upon this question before the bill was allowed to pass.

Mr. Rhys Davies seconded the amendment. It seemed to him that the Minister had simply put before the Consultative Council the alternative of agreeing to extra contributions being obtained or of shouldering this burden. The panel system under the State Insurance scheme was a failure. Prior to its advent the doctors for less money gave to the same patients whom they were now treating better service for more money. The approved societies were determined to have a say when the time came for the next agreement. He protested in the name of a large number of insured people against the provisions of the bill, his point being that it would limit the extension of benefits.

Dr. Farquharson said he had noticed with great regret that afternoon the ease and the avidity with which certain members chose to attack the medical profession: they sought to attack not only individual members of the profession, but the whole profession. If approved societies simply desired to improve the medical service by getting rid of black sheep in the medical profession they would find no more hearty co-workers than the great rank and file of the panel practitioners in this country. The medical profession were very desirous of improving the medical service. They recently agreed voluntarily to a very considerable diminution in their remuneration amounting to about £1,250,000. That was a very large sum of money which the doctors were giving up voluntarily. None should forget that the doctors were a very important part in the mechanism of the administration of National Health Insurance. One of the causes of the splendid surplus which many societies now possessed was to a very considerable extent the most effective work done by the medical profession under the Act. An honourable member had uttered a threat that if the societies did not get the doctors by the throat by the end of 1923 and make them do exactly as Mr. Thomas said they did in the old days, the approved societies would take this money and keep it. But those were the old days. There was then no State element and no employer element. Now the approved societies said, "We shall sweep away the right of the State and the right of the employer, and we shall dictate terms to the doctor." He wished to express gratitude to Sir Alfred Mond for what he had said. There had undoubtedly been an uneasy feeling in the medical profession, and rightly so, because not so many years ago doctors were slogging along at 1s. 6d. or 2s. 6d. per annum, attending individuals year in and year out for those sums. Did the House want to return to those conditions? He thought not. He had been a club doctor himself, and no harder work was ever done for a more miserable pittance than was done in those days. If the approved societies wished to force the profession back into that position, it would be a fight to a finish. The insured person would suffer. To the glory of the profession doctors would never refuse to attend the person who was ailing or sick, whether they got something or nothing. But he believed after what Sir Alfred Mond had said that when the time came to recast figures it would be done in a fair and straightforward way. The medical profession would not object to approved societies having access to the Minister. Why should they? It might be hoped also, that so far as Parliament was concerned, the financial transaction would be decided on its merits without a tax on the profession which had served the country so well.

Mr. G. Locker-Lampson suggested as a further economy for the Ministry of Health that service men should go out of health insurance when they joined the Forces. In point of fact, they got no health insurance benefit except for their wives in regard to maternity, and if they were taken out on joining the Services a great deal of unnecessary clerical work would be avoided. On leaving the Forces they could come in again and certain credits could be put to their account.

Mr. Myers regarded the bill as another example of the Government running away from its bargain. He quoted the remark of the Geddes Committee that the surpluses were largely due to the war. Even now there were direct evidences of the upward tendency of sickness benefits paid to women. Men back from the war were in a low state of physical efficiency and more liable to be thrown on the societies' funds. He referred to a statement by Sir Arthur Robinson of the Ministry of Health, who said that, although the societies had large accrued surpluses, they were going through a difficult time and they had extremely difficult times ahead of them. Moreover, there was not an approved society in the country to-day that would give its blessing to the principle of panel patients, and it was carried out in a way never intended at the inception of the Act. Was it seriously intended that insured persons should walk into the surgeries of a medical man and see a notice on cardboard, "Panel patients from 9 to 10," or "Panel patients Wednesdays and Thursdays only"?

The Minister's Reply.

Sir Alfred Mond, in reply, referred to the criticism of the constitution of the Consultative Council. He said that all the appointments of members of that Council were the results of nomination of groups, and he claimed that it represented the vast body of the great friendly societies and the trade unions. "There has been," he said, "a great deal of very valuable fruit from the bill. What we are altering is the rates of contribution by the various parties. We are removing extra grants which we gave in a moment of affluence and which we can no longer afford. Hon. members opposite will say, 'If you had only let us get the doctors we would have got them a lot cheaper,' and nastier, perhaps, 'and then you would not have to find any money.' I am not going back on that controversy now. There are plenty of hon. members who know how nearly the whole scheme broke down. In spite of the denunciation of the panel system I have yet to learn from any source any better scheme which is to be devised. I do not think it is seriously contended by any who knew anything about the old club practice in the old days that the medical service maintained in those days was really equal or superior to the practice which is being carried on to-day. I do not think that can really be seriously contended, and I do not think the people who benefit from the medical service to-day would adopt the somewhat harsh attitude that some hon. members have adopted towards the medical profession to-day. I have given that undertaking to those who represent the approved societies that when the time comes for endeavouring to arrange new terms with the medical profession I will consult them. I will attach full weight to all the views they express with their long experience. The power of deciding the terms is left with the Ministry and me, and that is a power which I cannot surrender, and if it was surrendered the Insurance Act as we know it would fall to the ground. As long as the Act which this House has passed remains in existence the responsible Minister cannot leave in other hands the settlement of the very important question of not merely the terms but the willing service and the readiness of the great medical profession. This is a full and frank explanation of the position."

On a division the second reading was carried by 113 votes to 52, and the bill was referred to a Standing Committee.

Work of the Voluntary Hospitals Commission.

In the House of Lords, on May 25th, the Earl of Malmesbury asked what progress the Voluntary Hospitals Commission had made in appointing local voluntary hospitals committees in accordance with the report of Lord Cave's Committee, and also for information as to the financial position of the hospitals, and the distribution of the Government grant of £500,000. He said he put these questions in no spirit of criticism, but with warm appreciation of what was being done by the Commission, and especially of the devoted services of the Chairman (the Earl of Onslow). The first inquiry was as to the response to the scheme and the number of committees still to be formed, and the second as to what portion of the fund had already been distributed, and the form in which the grants were made. Some suggestion had been made that a bonus might be given on good management, and thought that was a difficult matter. He hoped that any risk of the well managed hospitals getting less money than the less well managed hospitals might be avoided. With the present shortage of money there was no possibility of any funds being available for further expansion. The sources of the hospitals were dried up owing to taxation and the effects of the war. The cost of running was very much higher, the number of persons expecting treatment had enormously enlarged and a different class of patient was going into hospitals. The guardians and the ratepayers were somewhat jealous of their infirmaries being used for ordinary hospital purposes, but he hoped that means might be found

whereby there would be a greater exchange of duties between infirmaries and ordinary hospitals. He also hoped it would be found possible to give a place upon a central commission sitting in London to some representative of the Voluntary Hospitals Committees.

The Earl of Onslow, in reply, said that it was proposed to constitute in all sixty-two committees throughout England, Scotland, and Wales; fifty-two were already formed and were actually working, and six would very soon be ready. In two cases—one in England, the other in Scotland—no committees were to be formed because the local conditions were such that it was unnecessary; there was only one hospital in each county. In two other cases no decision had been reached. Some of these committees had been in existence for a considerable time, but the majority had only begun to work within the last few months. Each had been asked to report the actual situation in the area, and many had sent in valuable reports, though sufficient information had not been given about all the small areas to afford a comprehensive survey of an authoritative nature for the country. Very good reports had come from Devon, Cornwall, Warwickshire, Bristol, Derbyshire, Wiltshire, Sheffield, and some other districts. Touching Lord Malmesbury's suggestion that local committees should be represented on the Commission, the Earl of Onslow recalled that the Commission was formed on the proposals of Lord Cave's Committee, with the addition of a representative for Wales. Of the representatives on the Commission, five were appointed by the Ministry of Health, one by the Secretary for Scotland, and seven by various bodies connected with the hospitals, the Royal Colleges of Physicians and of Surgeons, the Order of St. John and the British Red Cross Society, the British Hospitals Association, the British Medical Association (which had two representatives, one for England and one for Scotland), and King Edward's Fund. That Fund having accepted the position of Voluntary Hospitals Committee for London, the metropolitan area was directly represented on the Commission. A conference of members of all local committees would meet in London on July 18th and 19th, when a full discussion of the subject would be possible. The views of the members of local committees as to whether the Commission would be strengthened and on how the representation might be made would be of great value. He thought it important to avoid making the Commission so large as to be unwieldy, but that did not appear to be a necessary corollary to the proposal. Of the original Government grant of £500,000, the Commission had spent £103,450 in London and £39,288 in the provinces—a total of £142,738. The reason that London had received so considerable a share so soon was that as King Edward's Fund was acting as the Committee reports were more speedily available. The London grants so far had been almost entirely emergency grants—that is to say, grants to hospitals who had exhausted their realizable assets. The grants, therefore, were mostly given before the annual accounts were made up. They had enabled beds to be reopened, and had prevented the threatened closure of others. The Commission decided as a general principle not to make grants in excess of half the deficit on the ordinary maintenance expenditure for the year ended December 31st, 1921, and those grants were to be made £ for £ against new money received or in sight. This term, "money received or in sight," was difficult to define; the Commission had explained it to the best of its ability, and was issuing a circular dealing with the matter at length. The Government grant of £500,000 was based on the estimate that the total deficit on maintenance account for 1921 would be approximately the same as that in 1920—namely, £1,000,000 for the whole country. But it was very gratifying to note that the reports so far almost all showed that in all probability the 1921 deficit would be considerably less than the 1920 deficit. The 1920 deficit in London amounted to £463,000, and the estimate—it was only an estimate, yet fairly accurate—was that the deficit for 1921 would be about £140,000 less. Similar figures came from other localities—hence the great hope of a considerable lessening in deficit. That being so he hoped that it might be possible to give some assistance in respect of accumulated deficits, but on that point nothing definite could be said until a complete estimate of the amount of the deficits for 1921 throughout the whole country was available. He appreciated the difficulty hospitals had found in presenting their claims, because they did not make up their accounts until the beginning of the year, but he hoped that claims would be soon completed so as to enable the distribution to proceed. An arrangement was made last year with approved societies for payments to hospitals in respect of their members. The Commission had had representations from the societies that the claims were not coming in from the hospitals. The Commission trusted that all hospitals would ask any patient who came to them whether they belonged to a society, and, if so, whether it was one of those societies upon which the hospital could make a claim, and that the claims would be proceeded with as soon as possible. Though the position of the hospitals was improving, the deficits were still very formidable, and no effort must be relaxed to put the hospitals on their pre-war footing. Co-operation was the only way—co-operation to reduce expenditure, to increase income, and to prevent overlapping and waste. Dealing next with schemes for extension which certain hospitals had proposed, he said that they must all be very carefully examined, and it must be shown that income was sufficient to meet any increased expenses of maintenance the extension would necessitate. He did not say their extension should not be undertaken, because in certain circumstances extension might be desirable, because sometimes capital expenditure was true economy. As to the possibility of utilizing Poor Law infirmaries, he said that co-operation had been found possible in certain places, and instanced Paddington and Wolverhampton; but Poor Law infirmaries were the property of the ratepayers and could not be touched unless the guardians were willing to co-operate. The local committees would be able to get an idea of what was required, and if the guardians were willing might form a scheme for utilizing vacant beds in the infirmaries. Many members of boards of guardians were members of voluntary hospital committees, and therefore co-operation should not prove difficult. In conclusion, Lord Onslow said that it appeared that income on the whole was well maintained, although in a few cases there had been a falling off, especially in areas which had experienced strikes. Moreover, expenditure was falling. The cost of food—a very large item in hospital expenditure—was coming down considerably, but drugs and dressings remained at a rather high figure. He referred to the success of the scheme for mass contribution illustrated in the Sheffield area, and said it was important for local committees to organize such schemes wherever possible. Until the Oxford scheme was developed the mass contributions were mainly confined to northern England, and its success at Oxford was worthy of note—no less than £16,000 had been raised there last year by these means. Hampshire had, he believed, already made a great success of the scheme. In Manchester there was an arrangement with the Hospital Saturday Fund for a combined collection and the organization of massed contributions. He was glad to congratulate London on its collection of the previous day.

In reply to further questions, Lord Onslow said he trusted there would be considerably more funds for the provinces. If further claims were sent in by local committees the Commission would be glad to consider them.

Drugs for Panel Patients.—Mr. R. Young asked, on May 25th, whether under the National Insurance Scheme necessary medicines beyond a certain price could not be prescribed for serious illnesses—for example, gastro-enteritis—and that therefore some panel doctors advised panel patients to become private patients. Sir A. Mond replied that insurance practitioners were required to order such drugs and appliances as were necessary without limit of price subject to certain precautions against needlessly expensive prescriptions. He should take severe disciplinary action in case of proved failure to carry out that duty. Mr. Young asked if Sir Alfred Mond knew that doctors called before the responsible committees had to give explanations of their expenditure and were reprimanded on occasions. Sir A. Mond did not doubt that course was taken. He would pursue what disciplinary action was necessary.

The Milk Supply.—Sir A. Mond in answer to Mr. Doyle, on May 24th, said he was advised that the conditions as to milk supply found in Newcastle were probably similar to those existing in other parts of the country. He was hoping shortly to introduce legislation on the subject of milk.

Outside Staff of Health Ministry.—On a question by Captain Elliot, on May 23rd, as to the regrading of the outdoor staff of the Ministry of Health, and the proportion of higher posts for men and women, Sir Alfred Mond said that women inspectors are engaged to inspect trades where women are mainly employed, and in inquiries as to the benefits of insured women. The proportion of higher to lower posts is fixed with reference to the requirements of the work, which is more limited in the case of women. The proportion is more favourable in the case of women.

Child Murder (Trial) Bill.—Lord Parmoor's Bill (subjected to severely definitive redrafting amendments) was passed through Committee in the Upper House on May 25th. The object of the measure is to allow of the reduction of an offence from "murder" to "infanticide" in cases where a mother has intentionally caused the death of her newly born infant at a time when she has not fully recovered from giving childbirth and when the balance of her mind is disturbed. The Lord Chancellor said it was not proposed to alter the law, so that the ordinary physical suffering of a woman in childbirth, aggravated by such additional mental suffering as a woman who had an illegitimate child was supposed to entertain, should alone constitute the ground for reducing responsibility. Exceptional derangement and disturbance must be established. The definition was a matter of difficulty, and would be subject to further consideration before the Report stage. It was the desire of the Government that the bill should become law, and no reasonable opportunity of getting it passed would be neglected.

England and Wales.

PRESENTATION TO DR. HERBERT JONES.

ON the conclusion of the session of the Hereford City Parliament Dr. Herbert Jones was presented with his portrait in oils, bearing the following inscription: "Presented to Dr. Herbert Jones, May 15th, 1922, by members of the Hereford City Parliament in recognition of his splendid services as Speaker since the inception of the Parliament in 1908." It gives us great pleasure to record this evidence of the esteem in which Dr. Herbert Jones is held in his own city. His public spirit and great administrative abilities are well known to members of the British Medical Association. He was president of the Worcestershire and Herefordshire Branch in 1915, and has been a member of the Central Council, as well as chairman of the Public Health Committee. It was largely through his exertions that the British Medical Association was able to obtain security of tenure for county medical officers of health in 1909, and last year for other medical officers of health. Speaking of his services a year ago, we observed that his keenness, assiduity, and diplomacy had at last received their reward in legislation of great public importance, since it placed medical officers of health in a position which enables them to do their duty without fear or favour. Dr. Jones has long been medical officer of health for the Herefordshire Combined Districts, having held that appointment, we believe, since the combination was formed; he possesses an encyclopaedic knowledge of the theory and practice of public health in this country. During the war he served continuously as Lieutenant-Colonel R.A.M.C.(T.).

BRITISH HOSPITALS ASSOCIATION.

The twelfth annual conference of the British Hospitals Association took place in Liverpool on May 25th and 26th, under the presidency of the Hon. Sir Arthur Stanley, G.B.E. A civic welcome was given to the members of the Association by the Lord Mayor, Alderman Charles H. Rutherford, who at once struck the note of finance, and the conference devoted itself to consideration of the financial straits in which hospitals throughout the country are placed. Sir Alan G. Anderson read a paper on "The change in hospital finance," and advised administrators of hospitals to follow the lead given by the Hospital Savings Association, a new London organization which had set up a scheme of regular monetary contributions to the hospitals among the working classes in the London area. The President voiced the opinion of the conference in stating that the public had determined that their voluntary hospitals were not to go, and those who were interested in hospitals had to bestir themselves and bring forcibly before the community the needs of these institutions. He thought that if the hospitals could tide over the next three or four years the voluntary system would reassert itself and the money would be forthcoming. Mr. H. Wade Deacon, chairman of the Liverpool Royal Infirmary, said that, generally speaking, patients were only too glad to contribute to hospital funds once they understood the need. In the subsequent discussion various methods were suggested by delegates, and there was a general consensus of opinion that contributions should not lose in any respect the inestimable value of being charitable and free-will offerings, bestowed on a cause that was directly and indirectly beneficial to all classes of society. Mr. W. Thelwall Thomas, senior surgeon to the Liverpool Royal Infirmary, read a paper on "The voluntary hospital: a retrospect and a prospect," and said that within his own personal experience the type of hospital patient had greatly altered. The necessitous poor were still as of old treated, but their numbers had diminished materially, their place being taken by a class who not only could, but would willingly, afford to contribute towards their maintenance and treatment. He pointed out that inasmuch as we had departed from the original object of the voluntary hospital, we must be prepared to modify the conditions of admission and of the medical service. He laid stress upon the point that it was not equitable that the medical profession should have so large a burden of gratuitous work thrown upon it.

Mr. Frank G. Hazell, superintendent of the Manchester Royal Infirmary, read a paper on "Hospital economies." He urged strongly the establishment of a central fund for the provincial hospitals on the lines of King Edward's Hospital Fund in London. He maintained that the voluntary hospitals should avail themselves of the important advantage attached to judicious advertisement. Their good work should be constantly and persistently kept before the public eye, and the public should be impressed with the fact that it was for their benefit that these institutions existed. The hospitals should be first in the mind of the public when charitable bequests were being considered. A discussion ensued, and the conference eventually passed a resolution requesting the Council of the British Hospitals Association to consider the formation of a Central Fund for Hospitals outside London. The afternoon of the last day of the conference was devoted to visits to hospitals in the neighbourhood of Liverpool, and the School of Tropical Medicine also attracted many of the delegates.

Scotland.

CARE OF MENTAL DEFECTIVES.

THE Right Hon. Robert Munro, Secretary for Scotland, has recently stated in Parliament that he is considering in consultation with the Treasury whether within the limits of the financial vote for the current year certain further provision can be made for the care and treatment of mentally deficient persons in Scotland.

GLASGOW CHILD WELFARE HOME.

The Mount Blow Country Home, the third home acquired under the Glasgow Corporation child welfare scheme, was officially opened on May 18th. It stands on a hill in a wooded estate, and has at present accommodation for forty children, but on the completion of several extensions it is expected that it will accommodate two hundred. Of the children already under treatment about 70 per cent. were admitted on account of rickets. The two other homes opened by the corporation are the Mount Vernon and Scotstoun; the children are sent to these homes after being examined by the medical officers at the different child welfare centres.

FIFE PRACTITIONER AND HIS ASSISTANT.

In the Court of Session, Edinburgh, on May 24th, Lord Morison gave judgement in an action by a Fife medical practitioner against his former assistant. A report of the case appeared in the *Scotsman* of May 25th. Lord Morison said that the real question at issue was whether the plaintiff justifiably terminated the defendant's contract of service in December, 1921. In November, 1919, the parties entered into a contract (containing a restrictive covenant to prevent the assistant from practising on his own account in a given area for a term of years), which was superseded in June, 1920, by an arrangement referred to as the draft agreement. This new arrangement differed in some material respects from the prior agreement. It substantially increased the assistant's salary and, according to it, the assistant, subject to certain contingencies, had the option of entering into a five years' partnership in June, 1922. Lord Morison said that the plaintiff's desire was to find some excuse to avoid entering into the co-partnership. No suggestion was made against the defendant's honesty and there was no complaint of his neglect of the plaintiff's patients. In his lordship's view the defendant's application to be placed on the list of panel doctors for Fife was merely a declaration that he intended to practise on his own account if the plaintiff persisted in the attitude that he was not bound by the draft agreement. His lordship found for the defendant, with costs.

Ireland.

REGIUS PROFESSOR OF SURGERY, DUBLIN.

AT a meeting of the Board of Trinity College, Dublin, held on May 19th, Sir William Taylor, K.B.E., C.B., Surgeon and Lecturer on Surgery at the Meath Hospital, was appointed Regius Professor of Surgery in succession to the late Dr. Edward Henry Taylor. Colonel Sir William Taylor, who was born in County Donegal in 1871, was educated at Strabane Academy, Dublin University, and the Royal College of Surgeons in Ireland. He has had a most distinguished professional career, and has held many important offices. He is a past President of the Royal College of Surgeons in Ireland and an honorary Fellow of the American College of Surgeons.

DANGER OF BAD MILK.

At a recent meeting of the Statistical and Social Inquiry Society of Ireland, Dr. J. W. Bigger read a paper on "Clean milk," in the course of which he stated that the chief danger involved in using cow's milk as a food for infants and children, and even adults, was not in its chemical composition, but in the presence in it of bacteria which might cause disease. It was with these bacteria, their source, and the methods used to prevent their presence in milk that his paper dealt. Bacteria, or microbes, or germs were exceedingly minute vegetable organisms of very simple type. Since the great pioneer work of Pasteur they knew that there were enormous numbers of different types of bacteria. The bacteria found in milk might be definitely harmful and disease-producing, or harmless, or those which were relatively harmless to the adult, but dangerous for young children. The chief sources of dangerous bacteria in milk were: (1) Diseases of the cow; (2) diseases of the milker, or others handling the milk; (3) the addition of dirt, chiefly excreta of the cow, either directly or indirectly to the milk. Diphtheria, scarlet fever, and foot and mouth disease might be conveyed from cows by milk, but only rarely. By far the most important disease common to both is tuberculosis. There were two chief types of tubercle bacilli, the human and bovine. The former is alone responsible for tuberculosis of the lungs or consumption, but both might affect other parts of the body, and a considerable amount of tuberculosis of the abdomen, of the lymphatic glands, and bones was due to the bovine type of bacillus. The child had much less resistance than the adult against the bovine type of disease. About 6 per cent. of all deaths from tuberculosis were due to drinking tuberculous milk, and very many children who escape death were rendered ill and weakened, or made life-long cripples, as a result of consuming infested milk. It had been estimated that 25 per cent. of milking cows suffer from tuberculosis, and 2 per cent. had tuberculous disease of the udder. He examined a series of Dublin milks and found out of fifty that four contained living and virulent tubercle bacilli—that is, 8 per cent. Public health authorities, by periodic medical inspection of workers, could usually exclude those suffering from any infectious disease, or if an epidemic should arise could trace it to its source, where it could be dealt with. Similarly, veterinary inspection of the cows should be able to exclude those whose health rendered their milk unsafe for human use.

Having dealt in detail with the precautions taken in American cities, the lecturer said that in Ireland they had no scheme for the supply of certified milk, and no maximum standard, and both were very badly wanted. If Dublin milk were on sale in Boston, 48 per cent. would have been condemned and their suppliers prosecuted. In Ireland, so long as fat was not abstracted, no offence was committed, although, in his opinion, it was a far more criminal act to sell a solution of manure in milk than a mixture of milk and water. Milk was to-day in this country sold merely as milk, and they knew nothing of its cleanliness or whether it was safe to drink. He would suggest the following requirements for a supply of certified milk for Ireland: All cows the milk of which was to be certified should be examined periodically by a veterinary surgeon, and be negative to the tuberculin test, and be otherwise healthy; all workers should be examined at intervals and pronounced free from transmissible disease; the dairy should be suitable for the purpose and be kept clean, the equipment should be of approved design, and facilities for proper cleaning be available; the milk should be cooled immediately after milking, and be sold within twenty-four hours; no certified milk should contain more than 200,000 bacteria per cubic centimetre, and lactose-fermenting bacilli should not be present in one twenty-fifth of a cubic centimetre. The fulfilment of these requirements would guarantee that certified milk was a safe food for infants and young children. His principal reason for bringing the subject before the Statistical Society was that last year in the city of Dublin 382 babies died from enteritis, and dirty milk was the cause of death in the majority of these cases. The bare figures give little idea of the sorrow and suffering caused, and, apart from all feelings of humanity, mere financial expediency would urge that the loss occasioned by this amount of disease should cease.

Discussion of Dr. Bigger's Paper.

Sir William Thompson, in moving a vote of thanks to Dr. Bigger, said that Dublin had the reputation of having the highest infantile mortality of any of the cities in Great Britain. With a sufficient amount of spirit they should be able to get a pure milk supply. If they got that, there would, he held, be a considerable decrease in infantile mortality.

Sir William Wheeler, Vice-President of the Royal College of Surgeons, dealt with the precautions taken in America to procure pure milk. There, he said, the public authorities published broadcast the results of their examinations of the character of the milk offered for sale, and this had a very salutary effect. Attention was largely devoted to obtaining for the people pure water, and he regarded it as equally important that pure milk should be available, especially for the feeding of children. It was terrible, when going through the wards of Dublin hospitals, to see the number of children who were being bowled over by bad milk.

Professor Heuston said that there was a great laxity shown in the handling, sale, and use of milk and butter. In Dublin a great deal of the milk was of a harmful character. There he declared milk was sold at equal value whether good or abominably dirty. The authorities condemned putrid meat and fish, but there was milk and butter sold in Dublin which if examined as carefully would be found to be equally bad. A great deal of the butter used by confectioners in Dublin was unfit to be used for food, and the users ought to be hunted up and fined. If that did not help, more vigorous steps might be taken. He insisted upon the cleanliness of the surroundings of the dairies, of the persons engaged in handling milk, and of the vessels, which should be put to the severest test. Sterilization should be adopted. The public should show a desire to have and a determination to get pure milk.

The Chairman (the Lord Chief Justice of Ireland), in conveying the vote of thanks, said that there was no reason why in Dublin they should not get as good milk as the people in Boston, whose standard showed that 48 per cent. of the milk of Dublin was bad.

Correspondence.

STATISTICS OF PUBLIC HEALTH.

SIR,—The substance of Sir Arthur Newsholme's American address having been reprinted in the *Lancet* (1921, ii, 833–6), the English reader can decide for himself whether Sir Arthur's charge of misrepresentation is well founded. The first sentence of the reprinted address is:

"Vital statistics or biometrics occupy in public health teaching and administration an essentially subsidiary position, being one of several tools which the public health worker employs in his pursuit of knowledge and measurement of results. To place them on an equal footing with the fundamental sciences of biology, chemistry and physics, and of pathology, preventive medicine, and epidemiology in public health administration, or in an organized programme for the training of public health officers, appears to me to imply confusion of thought and of plans."

What, then, are the essentially subsidiary uses to which statistics *may* be put? In Sir Arthur's words (p. 835):

"In statistical work there has been, hitherto, too much shovelling into heaps, and too little building of the edifice of public health. No elaborate mathematical work is needed for the study which I am advocating, or for ordinary public health needs; but it is necessary that there be an observance of the well-known rules of statistical accuracy and of sound reasoning, based on scientifically established pathological and medical knowledge, and made with an enthusiastic desire to make statistics act as a pointer to the areas in which excessive mortality or sickness exists, in order that, an intensive study of its vital statistics having been secured, a corresponding social and sanitary investigation may follow and the appropriate remedy may be applied."

The meaning of the first sentence in this quotation escaped me, but from the remainder I inferred that, in Sir Arthur's opinion, (*a*) rules of statistical accuracy and sound reasoning can be normally acquired without special training; (*b*) that the sort of training given in a department of biometry and mathematical statistics is waste of time for the student of preventive medicine; (*c*) that the primary function of the enthusiastic statistician is to call attention to something which has been done by adepts in the "fundamental sciences" or ought to be done by them.

Your readers will now judge whether I "failed to express accurately" Sir Arthur Newsholme's stated views.—I am, etc.,

Loughton, May 27th. MAJOR GREENWOOD.

STAIN FOR BLOOD FILMS.

SIR,—Dr. J. Shulman asks a question in the JOURNAL of May 20th (p. 826) which demands a somewhat detailed answer. The method of staining blood films with haemalum and eosin is probably known to all workers in haematology, but it is a method of only limited applicability.

The determination of the relative numbers of the different types of leucocytes in the blood depends upon a very detailed analysis of their structure. It is necessary to use a stain which will distinguish the details of nuclei and granules, and these latter may be neutrophile, eosinophile, basophile, or azurophile. Staining with haemalum and eosin cannot be expected to supply all this information; it is a valuable method of staining when the investigation of nuclear detail is the only object, and even the eosinophile material becomes a noticeable feature, but finer points such as azurophilia in large hyaline mononuclear cells and large lymphocytes cannot be detected. In order to obtain the best demonstration of nuclear detail with haemalum it is necessary to use films which have been fixed while still wet, and in these circumstances it is found that the red corpuscles are much deformed; it seems unlikely that the leucocytes are not also somewhat altered in shape. In films which have been allowed to dry before fixing the cells have an opportunity of returning to their ordinary shape. Jenner's stain is excellent in many ways, but it does not demonstrate the details of the nuclei very distinctly, and this makes it difficult to appreciate the structure of the myeloblast. If it is employed in the May-Grünwald manner, instead of the usual way, brighter results are obtained. Leishman's stain is extremely useful, but it does not give distinct pictures of the neutrophile elements of the leucocytes, although its rendering of nuclear detail is superior to that of Jenner. Giemsa's stain requires more experience if good results are to be obtained, but is a very excellent method, except that it, like Leishman's, does not render the neutrophile granules distinct. The best method available for routine haematological work is undoubtedly Pappenheim's panoptic, or the same author's panchrom, method. These methods depend upon the use of Jenner's method and counterstaining with Giemsa, or, preferably, panchrom, which is very similar to Giemsa stain, but contains an even greater variety of intermediate products of methylene blue.

The technique of staining is as follows:

1. Fix the dried films for three minutes with undiluted Jenner.
2. Dilute the Jenner with an equal part of distilled water and stain for one minute.
3. Pour off the diluted stain, but do not wash, and then pour on diluted Giemsa or panchrom. The dilution consists of 2.5 c.cm. of the stock stain in 10 c.cm. of distilled water; this should be made up in the vessel in which the staining is to be carried out, as the azur tends to adhere to glass and be wasted if the mixture is made in some other vessel and then poured on to the film.
4. Dry by blowing off the superfluous water and swinging about. Do not use heat, as this destroys the azur staining.
5. Mount in neutral balsam or euparal while there is still a trace of water present in the film.

This method should succeed every time it is tried; the only points requiring great care are the removal of all traces of acid from the glassware used and the freshness of the dilution of the Giemsa, which keeps only about half an hour. Further details about this method can be found in Pappenheim's *Technik und Methodologie der klinischen Blutuntersuchung*, 1919, second edition, p. 56. I have found no stains so satisfactory as those of Grübler.—I am, etc.,

ALFRED PINEY, M.R.C.P.Lond.

Pathological Department,
The University, Birmingham,
May 20th.

EXPECTANT TREATMENT OF MEASLES AND INFLUENZA.

SIR,—Dr. Carruthers, in his letter to the BRITISH MEDICAL JOURNAL (May 13th, p. 786), asks, "When will we learn to break away from the tradition of the textbooks and the fever hospitals?" I write to say that I did so many years ago, and have never regretted the step. During the past sixteen years I have treated over 200 cases of measles without a single death by the use of the following measures, which are somewhat similar to those suggested in Dr. Carruthers's letter: Avoid the use of all drugs other than aperients. Only allow drinks of water, diluted fruit juice, and whey sweetened with a little honey, till the temperature drops and the patient himself begs for something to eat. And keep him in bed until the cough is gone.

A brief account of my experiences in the tropics during an influenza epidemic of a virulent type may also be of interest. Twenty of my bad cases with high temperature, headache, general ache, and profound prostration volunteered to try the "water cure." They lived on nothing but water, strained orange juice, and a little weak tea, for four to six days, when the temperature came down and appetite manifested itself; then food was allowed. The first day's diet consisted of vegetable soup, milk, and fruit. On the second day toast-and-butter was given in addition. Later a little fish or chicken with plenty of conservatively cooked vegetables was added. No drugs were administered other than a saline purge, which was taken daily throughout the period of abstinence from food. Within eight to ten days from the time of going sick every case was fit and well enough to return to duty, and all had excellent appetites for even the plainest of meals.

I was not so successful, however, in other cases that insisted on getting textbook diet—milk, beef tea, egg flips, etc.—from the very commencement of their treatment. Few of them escaped the textbook complications—gastritis, bronchitis, pleurisy, or pneumonia—whilst one got double pneumonia and died. Most of them were unfit for work for two or three weeks, and some even longer.

There is no doubt in my mind that indigestion toxaemia is caused by coaxing or forcing nourishment into a stomach that is unable to deal with it properly, owing to absence of appetite, and is the chief factor in the production of the complications so often met with in measles, influenza, and other diseases. The wasted bodies of those who have been fed during acute illnesses is clear evidence to me that the nourishment given has not been digested, let alone assimilated. To waste away and die from lack of food is not a matter of days, as so many of us have been taught to believe, but probably of weeks. It is certainly a period far beyond the average time of recovery from acute diseases.—I am, etc.,

REGINALD F. E. AUSTIN,
Major, late R.A.M.C.

London, W., May 13th.

THE SEARCH FOR SPECIFIC REMEDIES.

SIR,—With reference to the action of emetine on fresh and vigorous amoebae, referred to in the leading article in the BRITISH MEDICAL JOURNAL of May 20th, may I point out that your deduction that the surprising results of methyl-emetine, dimethoxy-emetine, etc., were proportional not to their direct action on the amoebae but to their poisonous action on the patient, is not fair, for it is quite probable that the fact that dimethoxy-emetine, which had ten times the poisonous action on amoebae compared with the others and yet was *clinically* inert, is to be accounted for on the view, supported in the first place by the Italian observers Zancarol, Celli, and Fiocca, that streptococci are the active agent, rather than amoebae, in causing the clinical symptoms of so-called amoebic dysentery. I worked on this theory in a case of Hodgkin's disease, verified by opinions of high standing, in which there were rigors and a septicaemic condition, with the passage of bloody stools, quite "amoebic dysenteric" in nature; although the case was despaired of, I rapidly brought the patient round by injections of emetine hydrochloride gr. 1, night and morning, for a few days, on the hypothesis that Hodgkin's disease is caused by a streptococcal blood infection and should be amenable to the same treatment—namely, emetine—assuming the Italian observers were right. The glands in this case yielded to radium treatment, and, except for anaemia, the patient is well and has been able to attend to his duties and work since. Further, the article states that the nature of the co-operation between the remedial agent and the living tissues is hard to unravel; no doubt Ehrlich's side-chain theory is biochemically very right as it stands, but the ultimate fact is the action of remedial agents causing glandular hormone balance.—I am, etc.,

REGINALD LARKIN, M.D.Lond.

London, S.E., May 22nd.

DETOXICATED VACCINE.

SIR,—Dr. Jenkins, in a letter in your issue of May 27th (p. 858), says: "The fact that they [that is, bacterial split products] may act as efficient antigens proves nothing." This statement is too sweeping, and receives no justification from his allusion to the Wassermann reaction, since no one pretends that the extract in this test is an antigen or the body tested for an antibody.

The presence of a true antibody when tested for by a true antigen, as in the gonococcus complement-fixation test, may be taken as evidence of an attempt at immunization of some sort. But whether this is immunization against the whole bacterial protoplasm or only part of it is another matter. I believe that in the case of chemically treated vaccines an alteration of antigen takes place, yielding only a partial antigen, or at least leaving only a portion of the original antigen unchanged, the result being only partial immunization. This, I think, accounts for the disappointing results of detoxicated vaccines, even though some kind of antibody may be found in considerable amount. H. G. Wells and others have shown the possibility of splitting up proteins into several specific antigenic fractions.

It appears reasonable to suppose that most benefit will be derived from a vaccine which is as little altered as possible, either by heat or chemical agents. Such a vaccine can be prepared by ether extraction, and I have seen some success with this kind of vaccine. I make no extravagant claims for the method, since in my experience all vaccines yield disappointing, as well as good, results in apparently similar cases; but it seems to satisfy two of the fundamental requirements of vaccine therapy—the administration of large non-toxic doses and unaltered bacterial protein.

I am aware that this is in opposition to some recent American work, in which specific fats are said to be the agents in the production of immunity, but this work needs corroboration before it can be accepted.—I am, etc.,

A. H. PRIESTLEY,
Assistant Bacteriologist, University Public Health Laboratory, Birmingham.

May 29th.

AORTIC MURMUR.

SIR,—In your issue of May 13th (p. 759) Dr. Thomas Lindsay describes an aortic murmur which he first remarked in 1910. I noticed the condition at Shahjahanpur, India, in 1908, and published several cases, discussing the causation, and importance of recognizing the murmur, in the *Lancet* of March 6th, 1909, and also in the *R.A.M.C. Journal* of January, 1909; I described it as "postural."

The position which produced the murmur when standing up (namely, raising the arms) failed to produce it when the patient was lying down. I discussed the condition with Dr. J. Edward Squire, and in a postscript to a letter he sent me, dated December, 1908, he said: "Curiously enough, I put this letter aside to see a patient, and he furnished an example of your murmur. He was a healthy man of 28; the murmur was unaltered by respiration."—I am, etc.,

E. L. MOSS,
Major R.A.M.C.

Louise Margaret Hospital, Aldershot, May 15th.

MACHINE FOR CRUSHING GERMS.

SIR,—I gather from their paper (BRITISH MEDICAL JOURNAL, May 20th, p. 796) that Drs. David and Robert Thomson are unaware that several machines have been devised for disintegrating bacterial cells. The makers of tuberculin have long employed a ball-mill, which, however, takes a considerable time to act.

The late Sydney Rowland constructed two forms, one of which was extensively employed by the late Allan Macfadyean and also used, I believe, by Messrs. Burroughs, Wellcome and Co. In this form the material is frozen and the frozen mass is very efficiently ground. Then there is a ball-mill devised by Mr. J. E. Barnard, of which I have had considerable experience. Within half to one hour a large proportion of the bacterial cells are completely disintegrated—certainly 75 per cent. Both these machines (descriptions of which have been published) disintegrate the bacterial cells without any addition of chemicals, and I have used them for preparing endotoxins of typhoid, cholera, plague, diphtheria, and other organisms. Some of these endotoxins have been used for treatment and prophylaxis, and the results have been recorded by me in various papers.—I am, etc.,

R. TANNER HEWLETT.

Bacteriological Department, King's College, University of London, May 29th.

TUBERCULOUS DISEASES DIPLOMA (WALES).

SIR,—With reference to the notice of the Tuberculous Diseases Diploma (Wales), which appeared under the heading "Universities and Colleges," in your issue of February 25th, 1922 (p. 333), the following amendments in the Regulations for this Diploma, since recommended by the Faculty of Medicine, have now been adopted by the University authorities:

1. That the following words be added at the end of Category B, subsection (*a*)—namely:

> "Or alternatively a Certificate of one year's post-graduate work as a whole-time member of the staff of a recognized tuberculosis hospital, sanatorium, or dispensary, signed by the representative of the authorities for whom the work was performed, or by the administrative medical officer concerned."

2. That the following words be added at the end of Category B, subsection (*d*)—namely:

> "Or by the representative of the authority or the administrative medical officer under whom the year of whole-time work at tuberculosis has been spent."

I shall be much obliged if you will kindly give publicity to these amendments, as they widen the scope of the examination under Category B.—I am, etc.,

S. L. CUMMINS.

Cardiff, May 29th.

CLAYDEN *v.* WOOD-HILL.

SIR,—With the approval of the other signatories to the letter of appeal for this Fund which appeared in your issue of December 3rd last—Sir Robert Jones, Sir John Lynn-Thomas, Mr. George Gask, Mr. R. C. Elmslie, and Dr. Wilson Tyson—I am writing to say that it has been decided to close the Fund on June 30th. Will those medical practitioners and societies who have not up to the present subscribed, but who intend to do so, be good enough to forward their contributions to me with as little delay as possible?

I shall be much obliged if you will kindly publish the enclosed list of subscriptions in your next issue.—I am, etc.,

HAMILTON A. BALLANCE,
Honorary Treasurer.

All Saints Green, Norwich, May 27th.

Ninth List of Subscriptions.

Amount previously acknowledged, £1,428 8s. 10d.

£26 5s.

Medical Practitioners in Croydon, per Mr. Gervase E. Newby, O.B.E.: Mr. Elwell, £2 2s. Drs. Wayte, Cressy, Richards, Genge, Scudamore, Partridge, Hamond, Collyer, Redfern, Adams, Nicholls, Phillips, Poulett Harris, Lewin, Allan, Thompson, Pinkerton, Air, Messrs. Cowell, Collard, Neve, and Newby, £1 1s. each. Dr. Everington (2nd donation), Dr. J. Wayte, 10s. 6d. each.

£21 8s.

Members of the Newcastle-upon-Tyne Division of the British Medical Association, per Dr. E. Farquhar Murray, Hon. Sec.: Mr. H. B. Angus, Mr. J. W. Leech, Dr. S. S. Whillis, £2 2s. each. Dr. A. Parkin, Mr. R. J. Willan, £1 1s. each. Dr. A. Campbell, Dr. L. S. Davison, £1 each. Mr. J. H. Barclay, Drs. C. Barrowman, Mabel Campbell, R. Dagger, James Don, Mr. Hamilton Drummond, Drs. T. C. Grey, George Hall, W. T. Hall, James Hudson, A. Livingston, P. A. Mackay, Neil Maclay, Farquhar Murray, R. W. Nevin, Wells Patterson, Stanley Robson, H. L. Rutter, Andrew Smith, senr., S. Worthington, 10s. 6d. each. Dr. J. A. Sacco, 10s.

£14 3s. 6d.

Members of the North Lancs and South Westmorland Branch of the British Medical Association, per Dr. John Livingston, Hon. Sec.: Mr. A. S. Barling, President of the Branch, Dr. Fawcett, £1 1s. each. Drs. Alexander, Allan, Ashburner, Bayne, Blacklee, Bowman, Boyde, Carson, Cochrane, Collins, Craig, Cross, F. E. Daniel, Elliott, Livingston, Reed, Roberts, Rutherford, Sansom, Somervell, Thompson, Ware, Wilson, 10s. 6d. each.

£12.

Members of the Hartlepools Division of the British Medical Association (Hon. Sec., Dr. J. E. Mitchell), per Dr. Alfred Cox, O.B.E.

£10 10s.

The Torquay Medical Society, per Dr. A. Wightwick, Hon. Sec.

£8 8s.

Members of the City Division of the British Medical Association (Hon. Sec., Dr. H. Cuthbert Dixon), per Dr. Alfred Cox, O.B.E.: Drs. John Adams, James Turtle, W. E. A. Worley, H. C. Dixon, C. E. Evans, J. L. Hamilton, H. L. Hands, V. Feldman, £1 1s. each.

£6 3s.

Members of the East Dulwich Medical Society, per Dr. John Heard, Hon. Sec.: Drs. Langford, Robinson, Lea, Reynolds, Scatliff, Nimmo, Cox, Batten, Morton, and Heard.

£6.

Members of the Consett Division of the British Medical Association, per Dr. J. Charles, Hon. Sec.: Drs. E. G. D. Benson, A. Dewar, R. Parry, W. M. Morison, J. Charles, Fraser, Mackenzie, Murray, Gemmell, Fox, Cook, W. A. Benson, 10s. each.

£5 5s.

The Honorary Medical Staff of the Wolverhampton and Staffordshire General Hospital, per Mr. W. H. Harper, House Governor.

Dr. James R. Whitwell (Melton, Suffolk).

£5.

Sir John Atkins, K.C.M.G. (London)

£3.

The Bucks Division of the British Medical Association, per Dr. Thomas Perrin, Hon. Sec.

£2 10s.

Further donation from members of the Derby Medical Society, making a total of £24 5s. from this society (see list published on March 25th), per Dr. Charles E. Potter, Hon. Secretary.

£2 9s.

Further contribution from the Reigate Division of the British Medical Association (see list published February 4th), per Dr. T. Anstey-Chave, Hon. Sec.

£2 2s.

Dr. W. E. H. Banks, Falmouth
Dr. A. Graham-Stewart, Margate
Lieut.-Colonel J. W. F. Rait, I.M.S., Radlett
Dr. R. N. Highmoor, Litcham

£1 11s.

North Middlesex Division of the British Medical Association (per Dr. J. R. Richmond Ritchie, Hon. Sec.): Dr. J. D. R. Monro (Muswell Hill), £1 1s.; Dr. H. C. Staunton (Hornsey), 10s.

£1 1s.

Dr. R. W. Merrick, West Kensington
"Anon," Hampstead
"X.Y.Z.," Cambridge
Dr. Samuel A. Lane, Bognor
Dr. E. C. Mackay (per the *Lancet*), St. Leonards-on-Sea

10s.

Further contribution from South-Eastern Counties of Scotland Division of the British Medical Association (see list published April 29th), per Dr. M. J. Oliver, Hon. Sec.: Drs. Menzies and Hiddleston, Selkirk, 5s. each.

Dr. H. S. Hollis, Hove

5s.

Further contribution from Isle of Ely Division of the British Medical Association (see list published April 29th), per Mr. A. C. S. Waters, Hon. Sec.: Dr. Percy Moxey, March.

A BUILDING is to be erected in Winnipeg to be used exclusively by medical practitioners and dentists; it is stated that the rents will be controlled by those who take part in the enterprise and that the building will be erected in a side street to avoid high charges.

Universities and Colleges.

UNIVERSITY OF OXFORD.

Boyle Lecture.

THE Boyle Lecture of the Oxford University Junior Scientific Club will be delivered on Wednesday evening, June 7th, at 9 o'clock, in the hall of Balliol College, by Professor W. M. Bayliss, M.A., D.Sc. Wadham College, F.R.S. The subject of the lecture is "Life and the Laws of Energy."

UNIVERSITY OF CAMBRIDGE.

Diploma in Psychological Medicine.

A SHORT course of instruction for the D.P.M. examination will be held in Cambridge from July 12th to August 17th. The following lectures, etc., will be given: (*a*) Anatomy and Physiology of the Central Nervous System, with practical work (Dr. Roberts). (*b*) Psychology, with practical work (Mr. Bartlett and Dr. Miller), mental tests (Miss Fildes). (*c*) Psychopathology and Psychotherapy (Dr. MacCurdy, Dr. Noble). (*d*) Psychology and Pathology of Dreams (Dr. Rivers). (*e*) Mental Diseases, with clinical work (Dr. Archdale). (*f*) Mental Deficiency (Dr. Tredgold). The names of those who wish to take the course should be sent to the Secretary, D.P.M. Committee, Psychological Laboratory, Cambridge, by July 5th if possible.

Dr. H. B. Roderick, O.B.E., has been reappointed Demonstrator in Surgery for three years.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examinations indicated:

THIRD M.B., B.S.—*Honours:* †‖E. C. Dodds, ‖C. M. Gwillim, ‡Lily G. Iliff, *M. Maizels, §G. Massie, *§Merell P. Middlemore, ‡§D. C. Norris, *§A. C. Perry (University Medal), §Philippa P. Pughe, ‡E. H. Richards, *‡§E. H. Weatherall, *A. D. Wright.

Pass: Janet K. Aitken, Helen R. Ashton, E. T. Bailey, K. N. G. Bailey, E. Biddle, Hilda C. Bowser, Edith K. Budden, Jean E. Callander, P. C. L. Carrier, Anaple F. M. Christie, Alison M. Collie, Gwendolen C. Cotton, A. H. Douthwaite, Elizabeth C. Eaves, K. V. Edwards, F. T. Evans, Hilda M. Garlick, J. F. Hackwood, Doris M. Hammond, O. S. Hillman, Margaret O. Howell, F. C. Hunt, Erna H. Jebens, Winifred M. Jenkins, J. N. Kerr, H. T. Levieux, C. G. Lewis, R. C. Lightwood, D. McClean, H. J. McCurrich, E. K. Macdonald, S. A. S. Malkin, Eva J. Newton, Winifred C. Piggott, Olive G. Potter, Eleanor M. Reece, M. H. Renall, Elaine M. K. Salmond, H. Shannon, L. J. Soutter, H. V. Tilak, H. Tothill, Mildred Warde, Eva Young.

Group I: Sarah E. Andrews, N. D. Ball, Joyce R. Batten, J. A. Binning, S. Bloom, V. Feldman, J. Franks, A. J. Gardham, Laura P. Gibbon, Marjorie P. C. Greene, N. E. ff. Kemm, R. A. Madgwick, Enid M. Moore, J. B. G. Muir, B. S. Nissé, F. A. Pickworth, Tressila L. Pires, W. G. Rose, F. P. Schofield, Eleanor C. E. Stone, A. J. C. Tingey.

Group II.—Mary H. Y. Blakeston, J. C. Churcher, Marjory A. Godfrey, S. D. Rhind, H. M. Toop.

* Distinguished in Medicine. † In Pathology. ‡ In Forensic Medicine. § In Surgery. ‖ In Midwifery.

UNIVERSITY COLLEGE.

Applications for the Sharpey Physiological Scholarship, value £200 a year, must be received by the Secretary of the College, Gower Street, London, W.C., by June 15th.

The Services.

ROYAL NAVY AND ARMY MEDICAL SERVICES.

Parkes Memorial Prize.

THE Parkes Memorial Prize of 75 guineas in money with a gold medal is due to be awarded in 1923. The subject for the next competition is, "The principles of the prophylaxis of malaria, with the administrative and other measures for their application on active service." Essays must reach the Secretary of the Prizes Committee, Royal Army Medical College, Millbank, S.W.1, on or before August 1st, 1923. Each essay must bear a brief motto, and must be accompanied by a sealed envelope similarly superscribed and containing the name and address of the author. The Prizes Committee reserves the right to withhold the award should, in the opinion of the assessors, no essay attain a sufficiently high standard of merit. The successful essay becomes the property of the Prizes Committee.

The competition is open to the medical officers of the Royal Navy, Army, and Indian Army, of executive rank on full pay, with the exception of the professors and assistant professors of the Royal Naval Medical School, Greenwich, and of the Royal Army Medical College, London, during their term of office.

Royal Army Medical Corps: Alexander Memorial Prize.

The Alexander Memorial Prize of £50 with a gold medal is also due to be awarded in 1923. The subject for the next prize is, "Secondary wound shock; its causation, prevention, and treatment." Essays to be sent to the secretary, "Alexander Memorial Prize," Royal Army Medical College, Millbank, S.W.1, on or before August 1st, 1923. Each essay to have a motto and to be accompanied with a sealed envelope bearing the same motto and containing the name of the competitor. The committee reserves the right to withhold the award should, in the opinion of the assessors, no essay attain a sufficiently high standard of merit.

The competition is open to executive officers of the Royal Army Medical Corps on full pay, with the exception of the professors and assistant professors of the Royal Army Medical College during their term of office.

I.M.S. DINNER.

THE annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant on Wednesday, June 14th, at 7.45 p.m., with Lieut.-Colonel J. Anderson, C.I.E., in the chair. All particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S. (ret.), 63, Addison Road, Kensington, W.14.

Medical News.

SIR JOHN ROSE BRADFORD has been elected vice-chairman of the University College Committee. He will represent the University of London at the unveiling of the memorial to Pasteur in Strasbourg next spring. Pasteur was born on December 17th, 1822, but the ceremony at Strasbourg will, we understand, take place in May.

THE annual general meeting of governors of Epsom College will be held at 49, Bedford Square, W.C., on Friday, June 23rd, at 4 p.m., when the result of the voting for pensioners and foundation scholars will be announced.

THE Yorkshire Association of Medical Women held a dinner in the Leeds Medical School on Saturday, May 27th. Miss Aldrich-Blake, M.D., M.S., was the guest of the evening, and spoke on some of the aims and ideals of the Federation.

IT has been proposed by Dr. Freeland Fergus of Glasgow that members of the Hunterian Society (of London) who are present at the Annual Meeting of the British Medical Association in Glasgow should have the preference for an excursion to Long Calderwood, the birthplace of John Hunter. Various places of interest will be pointed out by Dr. Fergus, who will proceed with the excursion—such as the birthplace of David Livingstone, and the village of Bothwell, associated with the names of Joanna Bayley and Matthew Bayley. The exact cost of the excursion is not known, but it is thought that it will be considerably under £1. Will those members of the Hunterian Society who wish to take advantage of this invitation kindly communicate with Dr. Freeland Fergus, of 14, Newton Place, Charing Cross, Glasgow?

THE late Colonel Harry Littlewood, C.M.G., F.R.C.S., formerly of Leeds, has by his will bequeathed £1,000 to the University of Leeds upon trust for investment, and to apply the income in providing annual or biennial prizes in the anatomy department, to be awarded by and at the discretion of the professor of anatomy for the time being. The value of the testator's estate was sworn at £86,785, with net personalty of £70,905.

THE Congress of Radiology and Physiotherapy commences at the house of the Royal Society of Medicine (1, Wimpole Street, W.1) on Wednesday next, June 7th, and continues to June 10th. There will be three sections—radiology, physiotherapy, and electrology. At the morning meeting of the first section a discussion on the conditions of the normal stomach will be opened by Dr. Barclay (Manchester), Dr. Peremans (Antwerp), and Drs. Colombier and Tribout (Paris). At the afternoon meeting of the section Dr. Béclère (Paris), Dr. Murdoch (Brussels), and Sir Archibald Reid will open a discussion on the abnormal stomach. On Thursday and Friday deep therapy by *x* rays and radium will be discussed by this section. In the afternoon of June 9th demonstrations will be given at various hospitals, including one at St. Bartholomew's Hospital on intraperitoneal injection of oxygen. In the section of electrology Dr. Turrell (Oxford) will open on June 7th a discussion on the action of direct current (constant) on the tissues beneath the skin and mucous membrane. On the following day Dr. R. Woods (London) and Dr. Bourguignon (Paris) will introduce a debate on the uses of electrical methods in the diagnosis and prognosis of paralysis, and on Friday, June 9th, Dr. Cumberbatch (London) and Dr. Nobele (Ghent) will discuss the physiological and therapeutic uses of high-frequency currents. The section of physiotherapy has selected cardiac disorders as the first subject for discussion, to be introduced by Professor Bergonié (Bordeaux) and Drs. Justina Wilson, Parsons Smith, and Hunt (London). On June 8th the re-education of muscles and the treatment of scoliosis will be discussed, and on Friday, June 9th, the discussion will refer to backache and referred pain.

A TWO-DAY conference on mental deficiency will be held at Caxton Hall, Westminster, on Wednesday and Thursday, July 26th and 27th, 1922, under the auspices of the Central Association for Mental Welfare (formerly the Central Association for the Care of the Mentally Defective). The first day will be devoted to discussion of "Mental deficiency in relation to crime," and Lord Justice Atkin will give a concluding address. The second day will be devoted to educational matters, and the Right Hon. H. A. L. Fisher will attend and address the conference. Further details may be obtained from the honorary secretary, Central Association for Mental Welfare, 24, Buckingham Palace Road, S.W.1.

THE Ministry of Pensions announces that arrangements have been made, in co-operation with the Ministry of Health, for the provision at certain institutions for the treatment of tuberculosis, of facilities for vocational training, combined with treatment, which if satisfactorily completed should enable disabled men to become efficient workmen and to earn a livelihood at the occupation in which they have been trained. Applications for admission to the training courses will be considered if the applicant is resident in England; if he is suffering from tuberculosis accepted as attributable to or still aggravated by service in the great war; and if he is certified to be in consequence of that disability unable to follow his pre-war occupation or (without a course of training) any other suitable occupation, and it is necessary that he should be trained for another occupation. With certain exceptions applications must be made on a prescribed form through any Local War Pensions Committee not later than June 30th, 1922. No man will be admitted to training whose course cannot be completed by June 30th, 1924. These arrangements do not apply to officers or nurses.

THE Voluntary Hospitals Commission announces that it has decided to convene a conference of representatives of local hospital committees on Tuesday and Wednesday, July 18th and 19th, at the Ministry of Health. It is hoped that all local hospital committees will be represented by their chairman and secretary, but other members of committees will be welcome if they care to attend, and no limit will be placed upon the number of representatives from any particular committee. Cards of admission will only be sent to those persons whose names have been notified to the Commission not later than July 10th.

A GIFT of £10,000 has been made to aid cancer research by Mr. and Mrs. G. F. Todman, of Sydney, N.S.W., in memory of their daughter. At the request of the donors Sir Joseph Hood, M.P., has allocated the sum as follows: £4,000 to the Imperial Cancer Research Fund, Queen Square, Bloomsbury; £1,000 each to the Middlesex Hospital, the Cancer Hospital, Fulham Road, London, the Christie Hospital, Manchester, the MacRobert Endowment, Aberdeen University, and the Cancer Hospital, Glasgow; and £500 each to the Radium Institutes of London and of Manchester.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

SYMPTOMS PRODUCED BY PARATHYROID.

"W.," who finds in the paper on calcium deficiencies treated by parathyroid published by Drs. Grove and Vines in our issue of May 20th (p. 791) the statement that "in no case has there been any symptom of overdosage," asks for information as to the nature of such symptoms.

*** We referred the question to Dr. Grove, who writes: The literature is very indefinite on the subject of overdosage by parathyroid; what has been recorded is mental rather than physical, following enormous doses long continued, and was probably *post* rather than *propter*. In none of our cases (several hundreds) with the doses we have recommended were any untoward symptoms noticed or complained of, but one of our correspondents says that a female patient gave up treatment because she thought it gave her headache. We have obtained the definite result of normal blood with the small dose (a tablet a day), and where the blood has been long reaching normal we have not found that twice a day has hastened matters.

MEDICAL SECRECY.

A CORRESPONDENT asks us to add to the article on the Hippocratic Oath, published on May 20th, an account of "the practice in the courts about Hippocrates' time and subsequently in the matter of medical witnesses."

*** We fear that his wish cannot be complied with, for no reports of medical evidence in ancient Greece appear to have survived. In the Roman Empire the medical witness must have had (pace the edict of Julius Caesar) whatever privileges belonged to a Roman citizen. There are scattered references in the middle ages—for example, Erasmus (1500) states "the sublime imperial and pontifical laws voluntarily submit to the judgement of the physicians in questions of puberty, birth, and poisoning, and also in some matrimonial questions."

OSMICS AND PSYCHO-ANALYSIS.

MR. JOHN H. KENNETH, M.A., F.R.S.G.S. (Animal Breeding Research Department, High School Yards, The University, Edinburgh), who thinks that osmics—the science of smell—may be of use in psychotherapeutic practice, asks medical practitioners for their experience of the practical use of olfactory stimuli in psychotherapy. He writes: In the course of experiments on olfactory fatigue and on associations and affects evoked by different smells, the remarkable visual and (to a lesser degree) auditory recollections of scenes and events, in some cases of more than twenty years ago, hitherto forming part of unconscious memory, were extremely vivid, as expected. The same olfactory stimulus may, of course, release varied associations or groups of associations in minute detail. An emotional disturbance may be produced, and in the presence of a complex a marked resistance is noticeable, the smell stimulus being quite as potent as a word stimulus. Of the odorous substances experimented with, musk, otto of roses, tonka bean (cumarin), and cedar-wood oil gave the most vivid results, while resistances were encountered in certain cases with musk, clove oil, and asafoetida. Experiments with the galvanometer will be carried out in due course.

INCOME TAX.

"J. F." inquires whether he is entitled to deduct, for the purposes of an assessment under Schedule D, expenses incurred in travelling in and about London to attend at two centres where he did Ministry of Pensions work on a fee basis.

*** If he is assessed under Case I, Schedule D, as for profits of carrying on a profession, we think that the expenses could be deducted; if he is assessed under Case III, Schedule D, we consider that the only expense that can legally be deducted is the expense of travelling between the two centres.

"T. McC." for many years did not claim all the expenses to which he was entitled—for example, he did not claim a deduction for the board and wages of an indoor servant. He asks what remedy he is now entitled to claim.

*** Unfortunately none; in the circumstances of his practice he could properly have claimed one-half of his total rent and rates and the cost of one maidservant, but his right of objection to an assessment is limited to the period of twenty-one days from the date of the formal notice of assessment, which was presumably sent to him. In all the circumstances the local inspector might reasonably concede an adjustment of the assessment for 1921–22—by reducing the July instalment of tax—but "T. McC." has no legal title even to that.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 49, 52, and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at pp. *219*, *220*.

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